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AUTHOR Sweet, Arleene, Ed.
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ABSTRACT

An overview of changes related to instructional programs that have occurred at Missouri's public four-year institutions between fiscal year (FY) 1983 and FY 1987 is provided. This updates a similar report published in 1983 for the years 1972-1982. It is part of an effort to employ an analysis of enrollment patterns, program mix, and institutional resource utilization to determine the effects of these factors at the state and institutional levels on the achievement of the higher education public policy goals of financial access, institutional quality in terms of mission, and funding efficiency. The subjects are: enrollment trends, FY 1983-FY 1987 (background, full-time equivalency enrollment, student level, part-time/full-time status, market share distribution, and summary observations); degrees conferred, FY 1983-FY 1987 (degree levels, discipline differences, discipline differences by sector, and summary observations); minority participation, FY 1983-FY 1987 (student level, student status, sector differences, degrees conferred, gender differences, and summary observations); and productivity trends, FY 1984-FY 1987 (instructional research staff, instructional expenditures, credit hours produced, credit hours produced per instructional staff, expenditures per credit hours produced, and summary observations). (SM)

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COORDINATING BOARD FOR HIGHER EDUCATION

# TRENDS IN INSTRUCTIONAL PROGRAMS

## MISSOURI PUBLIC FOUR-YEAR COLLEGES AND UNIVERSITIES

Fiscal Year 1983 - Fiscal Year 1987

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# TRENDS IN INSTRUCTIONAL PROGRAMS

## MISSOURI PUBLIC FOUR-YEAR COLLEGES AND UNIVERSITIES

Fiscal Year 1983 - Fiscal Year 1987

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Jefferson City, Missouri

June 1988

Professional Staff Responsible for Report:

Michael A. McManis, Assistant Commissioner for Academic Planning

Robert Stein, Research Associate

101 Adams
Jefferson City, Missouri 65101
Editor: Arleene Sweet

TABLE OF CONTENTS


Executive Summary i

Enrollment Trends ii
Degrees Conferred ii
Minority Student Trends iii
Productivity Trends v
Conclusion v

Section I: Enrollment Trends - FY 1983 - FY 1987 1

Background 1
Full-Time Equivalent Enrollment 1
Student Level (Undergraduate/Graduate/First Professional) 5
Part-Time/Full-Time Status 6
Market Share Distribution 10
Summary Observations 12

Section II: Degrees Conferred FY 1983 - FY 1987 15

Degree Levels (Aggregate and Sector Differences) 15
Discipline Differences 18
Discipline Differences by Sector 22
Summary Observations 27

Section III: Minority Participation FY 1983 - FY 1987 29

Student Level 31
Student Status 34
Sector Differences 35
Degrees Conferred 38
Gender Differences 40
Summary Observations 47

Section IV: Productivity Trends FY 1984 - FY 1987 49

Instructional Research Staff 49
Instructional Expenditures 51
Credit Hours Produced 53
Credit Hours Produced Per Instructional Staff 54
Expenditures Per Credit Hours Produced 56
Summary Observations 58

## EXECUTIVE SUMMARY

This report provides an overview of changes related to instructional programs that have occurred at Missouri's public four-year institutions between fiscal year 1983 and fiscal year 1987 and is an update of a similar report published in 1983 that covered the period 1972-82. This report is a continuation of an effort to employ an analysis of enrollment patterns, program mix, and institutional resource utilization to determine the effects of these factors at the state and institutional levels on the achievement of the higher education public policy goals of financial access, institutional quality in terms of mission, and funding efficiency. Descriptive information about enrollment, degrees conferred, and productivity in relationship to instructional activities and observations about trends in the data are provided. In addition, a section on minority participation patterns in postsecondary education at the public four-year institutions is included since the economic health of the state and nation will be increasingly linked to the ability of minority youth to realize their full educational potential.

The period between fiscal year 1983 and fiscal year 1987 saw a variety of CBHE initiatives aimed at strengthening higher education in Missouri by increasing institutional diversity and managing change through systematic, strategic planning at both the state and institutional levels. In light of economic forecasts, which predict relatively limited growth in the availability of state funds into the next decade, continued demands for effectiveness and efficiency of all public services dependent upon the state treasury can be expected. These factors suggest that this analysis of updated trends in instructional programs at Missouri's public four-year institutions is well-timed.

In general, the last five years involved a decline in terms of total full-time equivalent (FTE) students but at a rate slower than was projected for this period in an earlier study. Despite overall declines, the proportion of part-time enrollment continued to increase across all types of public four-year institutions but not at rates sufficient to off-set full-time enrollment losses. In terms of degrees conferred, the aggregate total decreased but at a rate slower than enrollment. In addition, compared to the previous decade, significant shifts in graduation patterns at the discipline level took place. A review of several productivity measures revealed major changes from past trends resulting in a period of relative recovery from the resource erosion that occurred in the late 1970s and early 1980s. Finally, an analysis of minority participation demonstrated the low proportion of Black students involved in higher education within the public four-year sector relative to their distribution in the general population of Missouri. As might be expected, however, individual institutions experienced all of these trends differentially. The following are more detailed highlights of these findings.

Enrollment Trends

- Total full-time equivalent (FTE) enrollment at all of Missouri's public four-year institutions declined 6.9 percent between FY 1983 and FY 1987. Although this decline was not unexpected, a study published by the CBHE in 1983 anticipated that headcount enrollment would decline by 11.4 percent for these institutions by fiscal year 1987. Based upon the pool of potential, traditional age college students in Missouri, it can be anticipated that this decline will cease for two or three more years and then resume through 1992. At that time enrollments should gradually increase but should not equal the peak years of the early 1980s anytime this century. The amount of increase -- if any -- in high school graduation rates and postsecondary retention rates as well as continued growth in the number of part-time and nontraditional students could affect the magnitude of these anticipated changes.

- The general enrollment decline during this period was concentrated primarily at the undergraduate level although first professional enrollments also declined. In contrast, graduate enrollments essentially held steady with a slight 0.2 percent increase. The most dramatic shifts in full-time equivalent enrollment involved changes in student status. For all public four-year institutions, part-time enrollment increased 11.0 percent while full-time enrollment decreased 9.3 percent. However, only in the case of Lincoln University did the full-time equivalent gains in part-time enrollment even approach the magnitude of the losses incurred in full-time enrollment.

- The enrollment decline that has occurred in the last five years affected the institutional sectors differently with a range of change at the aggregate level for all types of students varying from -11.3 percent for the University of Missouri system to -0.3 percent for Lincoln University. The University of Missouri system alone accounted for 78.0 percent of the decline statewide. Only two institutions (Harris-Stowe and Southwest) had net increases during the period.

Degrees Conferred

- Degrees conferred declined a modest 1.8 percent statewide between fiscal year 1983 and fiscal year 1987 for all public four-year institutions, but there was a wide variance across the several degree levels offered and at the institutional sector level. For example, for all sectors certificates and master's degrees declined (-47.5 percent and -5.1 percent, respectively) while bachelor's degrees remained essentially steady with a negligible increase of 0.4 percent. The amount of change in total degrees awarded at the institutional sector level ranged

from an increase of 8.2 percent at Northeast to a decline of 8.4 percent at Lincoln.

- Shifts in degree productivity at the discipline level showed comparable volatility during this period. In terms of percent change for all types of degrees awarded, agriculture experienced the largest single decline at 22.3 percent while computer science had the most growth, 35.2 percent. Looking at bachelor degrees only across all of the institutions, ten disciplines experienced increases while nine experienced decreases and one remained unchanged. At the master's degree level thirteen disciplines experienced decreases, one remained virtually unchanged, and five increased. The significance of much of this information is that many of the trends identified in the previous decade had been reversed, reflecting the type of cyclical changes in student interest patterns that frequently occur in higher education, with obvious implications for possible changes in institutional resource allocation patterns.

Minority Student Trends

- According to the 1980 census, Blacks represented the largest minority in the state's general population, comprising 10.5 percent of the total. All other racial groups accounted for only slightly more than one percent. The classification "Hispanic" is an ethnic rather than a racial category, and Hispanics accounted for 1.1 percent of Missouri's population. While all minorities, including nonresident aliens, constituted 10.7 percent of the total enrollment in Missouri's public four-year institutions in 1987, Blacks made up only 5.7 percent while all other groups collectively (American Indian, Asians, Hispanics, and nonresident aliens) were 5.0 percent. As a consequence, Black participation in the public four-year institutions was about half of what it might have been, based upon general population figures. It is important to note that since Blacks have a relatively higher participation rate at two-year rather than four-year institutions, many of the comparisons included in this section could differ significantly if the public two-year institutions were included in this analysis.

- Despite the relatively low total participation rate of Blacks at the public four-year institutions, it is interesting to note that the general decline in total enrollments for the period fiscal year 1983 - fiscal year 1987 affected Blacks and whites comparably, -4.4 percent and -3.2 percent, respectively. Curiously, though, all other minorities as a group increased their participation during the same period by 3.8 percent, primarily due to increases by Asian students.

- Regarding student level, while Blacks outnumbered other minorities at the undergraduate level by nearly two-to-one, at the graduate level the reverse was true: other minorities constituted 12.5 percent of the total while Blacks were 3.3 percent. This latter situation was the result of a relatively high graduate enrollment by nonresident aliens, equalling 9.8 percent of all graduate students in Missouri. At the first professional level Blacks represented only 3.8 percent of enrollment, while other minorities had almost twice as many students.

- The shifts in Black enrollment patterns with respect to full-time/part-time status were substantially higher than those recorded for white students. That is, for these trend years Black full-time enrollment decreased 13.1 percent in comparison to a white decrease of 8.5 percent while Black part-time enrollment increased 18.8 percent against a 9.3 increase for whites. At the aggregate level, however, the percentage of Black part-time students remained comparable to the percentage of white part-time students (34.0 percent and 30.4 percent, respectively) although a continuation of these trends could reverse this pattern.

- With respect to degrees conferred, the data suggest that Blacks may have a higher attrition rate than other minorities or whites. While Blacks constituted 5.7 percent of all enrollments at the public four-year institutions, they received only 3.5 percent of the degrees. In contrast, other minorities as a group constituted 5.0 percent of all enrollments while they received 6.1 percent of the degrees. The comparable figures for whites were 89.3 percent and 90.3 percent. Of the degrees conferred upon Blacks at the public four-year institutions in 1987, 76.1 percent were at the bachelor's level while 18.0 percent were at the master's level.

- An analysis of gender differences within race/ethnic classifications revealed the higher participation of Black females compared to Black males across all three student levels (58.5 percent undergraduate; 65.4 percent graduate; and 52.6 percent first professional). Furthermore, these male/female comparisons demonstrated a higher rate for Black females compared to the other race/ethnic female participation rates. In addition, all women except nonresident alien females had higher part-time participation rates than would be expected based on their percentage of enrollment. Data on degrees conferred suggested a lower completion rate for minority women compared to minority men and to white women. Collectively these data suggest the importance of including analyses of gender differences within race/ethnic classifications in future investigations.

## Productivity Trends

- The analysis of productivity trends was limited to the period fiscal year 1984 - fiscal year 1987 owing to some missing data for fiscal year 1983. The productivity profile for the public four-year institutions represented a sharp break with the period 1979-82. Across all sectors, full-time instructional staff decreased 2.1 percent while credit hours produced decreased 6.6 percent, resulting in a net decrease in credit hours per full-time equivalent staff of 4.7 percent. At the same time total instructional expenditures adjusted for inflation as measured by the Higher Education Price Index increased 10.3 percent while inflation adjusted expenditures per credit hour increased 18.1 percent. As might be expected, these figures differed widely across the institutional sector categories. For example, the percent change in full-time instructional/research staff ranged from an increase of 6.9 percent at the state colleges to a decrease of 3.8 percent at the University of Missouri while the percent change in credit hours per full-time faculty ranged from a decrease of 2.2 percent at the regional institutions to a decrease of 17.3 percent at Lincoln. The percent change in inflation adjusted expenditures per credit hour ranged from an increase of 15.8 percent at the University of Missouri to an increase of 28.7 percent at Northeast. These trends represent a period of relative recovery in contrast to the serious resource erosion that occurred in the previous decade.

## Conclusion

- The cumulative effect of this analysis is to emphasize the dynamic quality of the higher education enterprise in Missouri as well as the diversity of the institutions. It is clear that a variety of challenges must continue to be addressed, ranging from the effects of declining enrollments in the system as a whole to increasing the recruitment and retention of Blacks to dramatic shifts in student interests among disciplines with the concomitant need to monitor resource allocations carefully. In recent years the institutions have had the opportunity to recover a portion of their financial base that eroded in the 1970s and early 1980s, but the expectation of dwindling state funds for the next few years clearly suggests the need to manage available resources very carefully. Given the dynamic quality of the higher education system in an environment of limited resources, the maintenance of clear institutional priorities as a guide to resource allocation decisions will remain essential.

# SECTION I
# ENROLLMENT TRENDS
# FY 1983 - FY 1987

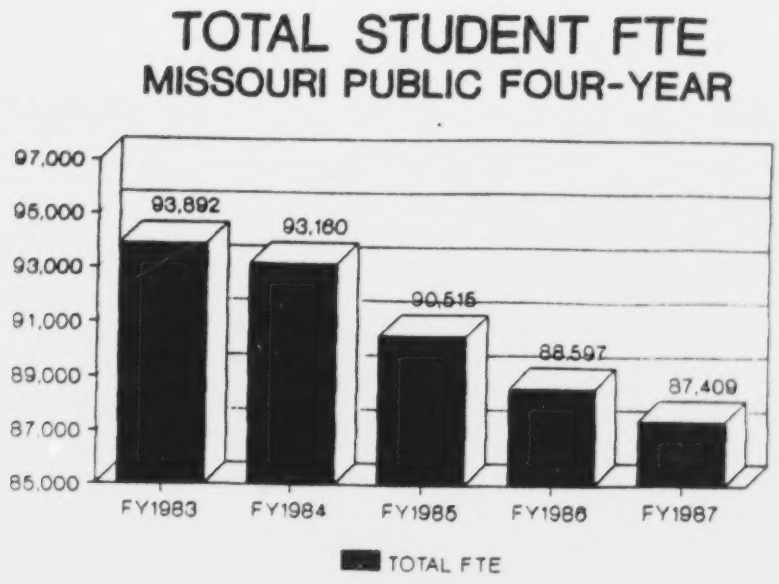
## BACKGROUND

Projections made by CBHE staff in June, 1983 in the Master Plan III Assessment Project Report Number Three predicted that total enrollment at Missouri's public four-year institutions would decrease approximately 11-12 percent between the Fall, 1981 and Fall, 1987 terms. These predictions were based on assumptions of constant market shares and student mix among all sectors and types of higher education institutions in the state of Missouri. As with national data, an estimated decline in the pool of high school graduates was a major factor affecting these predictions. Enrollments did decrease, but not as drastically as predicted. These trends are outlined in detail in the following paragraphs.

The above projections for the state involved headcount enrollment as a data base. The use of headcount enrollment tends to reflect reality best when almost all students attend college on a full-time basis. As part-time students increase their participation in higher education, it is misleading to rely on headcount as an appropriate reflection of student participation. Full-time equivalent (FTE) enrollment, based on a formula of 12 graduate credit hours and 15 undergraduate credit hours per semester per one full-time equivalent student, is a more meaningful indicator of students as a resource base and will be used as the unit of analysis for enrollment data in this report. The formula used for full-time equivalent first professional enrollment varies and was provided by each of the three institutions that offer these degrees. In addition to aggregate level data, some of the analyses of the trends are reported separately for each of five sectors based on differences in institutional mission. These five sectors include: 1890 land-grant institution (Lincoln); state liberal arts and sciences (Northeast); state colleges (Harris-Stowe, Southern and Western); regional universities (Central, Northwest, Southeast and Southwest); and 1862 land-grant institution (UMC, UMKC, UMR, and UMSL).

## FULL-TIME EQUIVALENT ENROLLMENT

Full-time equivalent enrollment has been on a downward trend between fiscal year 1983 through fiscal year 1987 at Missouri's public four-year institutions of higher education as exhibited in Display 1. The trend of a 6.9 percent decline in total enrollment across all public four-year sectors contrasts sharply with the increases experienced in the immediately proceeding years, much less the continual growth characteristic of earlier decades.




DISPLAY 1

Display 2 presents changes in full-time equivalent enrollment for each of the public four-year sectors between fiscal year 1983 and fiscal year 1987. It is significant that every sector within the system experienced some decline, though the rate of decrease varied across sectors and two of the state's 13 four-year campuses actually experienced net increases (Harris-Stowe and Southwest). The loss of 11.3 percent by the University of Missouri system is over twice as large as the rate of decrease experienced in any other sector in percentage terms while in absolute number of full-time equivalent students the university's loss was more than six times greater than the next largest sector decline. While the University of Missouri accounts for just less than 50 percent of the total enrollment among all the public four-year institutions, the university experienced 78 percent of the enrollment loss in the entire public four-year system. While part of this decline is explained by a planned reduction at UMR, an explanation for the total amount of enrollment loss across the University of Missouri system requires more extensive study. However, it is clear that the significant changes at the University of Missouri greatly influence overall changes in the total public four-year system.

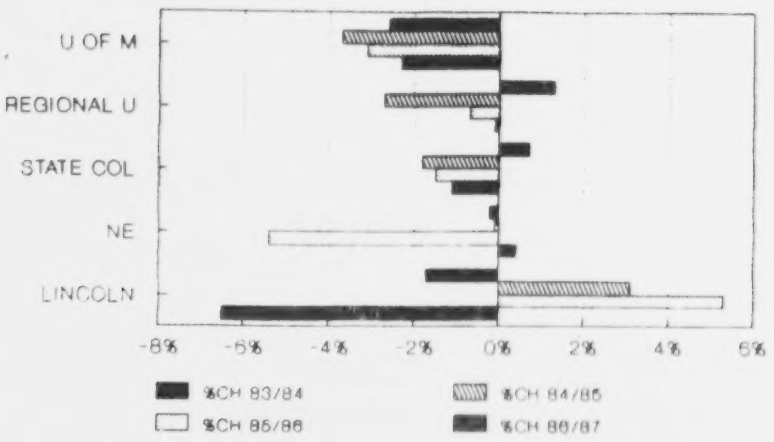
FULL-TIME EQUIVALENT STUDENT ENROLLMENT
CHANGE BY SECTOR
FY 1983 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

| Sector | Total FTE FY 1983 | Total FTE FY 1987 | Percent Change FY 1983-87 | Absolute Change |
|---|---|---|---|---|
| Lincoln | 2,115 | 2,108 | (0.3)% | (7) |
| Northeast | 6,434 | 6,090 | (5.3)% | (344) |
| State Colleges | 7,381 | 7,067 | (4.3)% | (314) |
| Regional Universities | 33,221 | 32,462 | (2.3)% | (759) |
| University of Missouri | 44,741 | 39,682 | (11.3)% | (5,059) |
| TOTAL | 93,892 | 87,409 | (6.9)% | (6,483) |

DISPLAY 2

An analysis of the changes across the five-year period of this study for all of the public four-year campuses reveals that the largest year-to-year decrease to date occurred in fiscal year 1985, representing a loss of 2.8 percent. Although the annual rate of decrease slowed to 1.3 percent in fiscal year 1987, enrollment decline was experienced differentially in each of the sectors. Display 3 presents total full-time equivalent enrollment annual rate of change for each sector for each of the trend years. While there is clear variation across the sectors, the amount of percentage change in any given year is relatively small. A distinct pattern is evident, however, for three of the five sectors. The annual rate of decrease has consistently slowed since the peak year of 1985 at the state colleges, regional universities and the University of Missouri system. The patterns at Northeast and Lincoln do not fit this trend and require separate consideration.

# FTE ANNUAL RATE OF CHANGE
## MISSOURI PUBLIC FOUR-YEAR




DISPLAY 3

The new mission at Northeast to become a statewide liberal arts college is a major factor in this institution's change. Part of the five-year plan approved by the CBHE for Northeast includes a commitment to consolidate programs, reduce total enrollment, and increase the level of preparation of entering freshmen. Meanwhile, increases experienced by Lincoln in the middle of the five-year period under review were off-set by a sizeable decrease (-6.5%) experienced in fiscal year 1987. The administrative and financial problems faced by Lincoln in recent years are factors that have created a negative effect on enrollment. While Lincoln has developed a new institutional plan that has been approved by the CBHE, has addressed its budget deficit, and has secured new leadership, it is anticipated that it will take some time to counter the negative publicity that was associated with Lincoln's past problems.

Although preliminary data from fiscal year 1988 indicate a continuation of decreased enrollment for both Northeast and Lincoln, they also support the conclusion that enrollment decline for the other three sectors may have reached a plateau, at least temporarily. Data provided by the Department of Elementary and Secondary Education indicate that the pool of eligible high school graduates which underwent substantial decreases between 1981 and 1986 actually increased in 1987 and is expected to continue an upward swing through 1989. While this trend partly accounts for the recent stabilization of enrollment conditions at the state colleges, regional universities, and the University of Missouri system, it is likely that full-time equivalent enrollment will again decline after 1989 as the projections for high school graduates

suggest another sharp drop through 1992. Attempts to increase the participation of nontraditional students and to improve high school graduation rates as well as college retention rates are three factors that could serve to counterbalance the effects of a shrinking pool of high school graduates.

STUDENT LEVEL
(UNDERGRADUATE/GRADUATE/FIRST PROFESSIONAL)

While full-time equivalent enrollment declines for all levels of instruction have been characteristic for the total public four-year system between fiscal year 1983 and fiscal year 1987, Display 4 demonstrates that student level makes a difference in the direction and magnitude of the changes taking place and that there are differences among the sectors. Since undergraduate enrollment approaches almost 90 percent of the total, it is not surprising that the pattern of decline illustrative of the total system is representative for undergraduate enrollment when it is considered in isolation. (Notwithstanding the large loss by the University of Missouri system as a whole, it is important to acknowledge that UMKC actually experienced a negligible increase of 0.9 percent in undergraduate enrollment during this time period.) On the other hand, graduate full-time equivalent enrollment, which makes up just over eight percent of the total, showed very little change between fiscal year 1983 and fiscal year 1987 (0.2 percent increase). Although there were variable changes across the trend years for graduate instruction, the image of stability is underscored by the small number of full-time equivalent graduate enrollment involved in these changes (less than 50 FTE in any sector). Finally, first professional full-time equivalent enrollment, which is slightly less than three percent of the total, declined 5.1 percent over the five-year period.

FULL-TIME EQUIVALENT ENROLLMENT
CHANGE BY STUDENT LEVEL
FY 1983 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

| | Undergraduate | | Graduate | | First Professional | |
|---|---|---|---|---|---|---|
| Sector | Percent Change FY 1983 - FY 1987 | Absolute No. Change | Percent Change FY 1983 - FY 1987 | Absolute No. Change | Percent Change FY 1983 - FY 1987 | Absolute No. Change |
| Lincoln | 0.3% | 7 | (13.3)% | (14) | N/A | N/A |
| Northeast | (5.0)% | (297) | (10.5)% | (47) | N/A | N/A |
| State College | (4.3)% | (314) | N/A | N/A | N/A | N/A |
| Regional Universities | (2.5)% | (789) | 1.8% | 30 | N/A | N/A |
| University of Missouri | (13.5)% | (4968) | 0.9% | 46 | (5.1)% | (137) |
| TOTAL | (7.6)% | (6361) | 0.2% | 15 | (5.1)% | (137) |

DISPLAY 4

Despite these differences in trends for each student level, the overall percent distribution of enrollments among the three types of students (undergraduate, graduate, and first professional) remained fairly constant over the trend years. Apparently changes in the size of the available student pool did not affect this proportion. The homogeneity in percentage distribution across student level is even more interesting in light of a depressed economy and increasing occupational specialization which are both factors that tend to be associated with increased demand for graduate and first professional educational experiences. Potentially, characteristics of prospective students, including socioeconomic status and student ability, might be factors influencing the distribution of student enrollment. The stability in the present data coupled with only slight changes in the previous decade suggest that enrollment changes in the next decade are not likely to drastically affect the overall distribution of student level within the public four-year sector.

## PART-TIME/FULL-TIME STATUS

The most dramatic changes in full-time equivalent enrollment occurred with regard to part-time/full-time status which are presented in Displays 5, 6 and 7. For all of the public four-year institutions as a group, full-time enrollment decreased 9.3 percent between fiscal year 1983 and fiscal year 1987 while part-time enrollment rose 11 percent. The trend line for part-time FTE indicates a continual rate of increase for each of the trend years with the largest rate of increase in fiscal year 1987. While part-time enrollment was only 13.8 percent of the total FTE in fiscal year 1987, it is likely that this segment of the prospective student population will continue to increase.

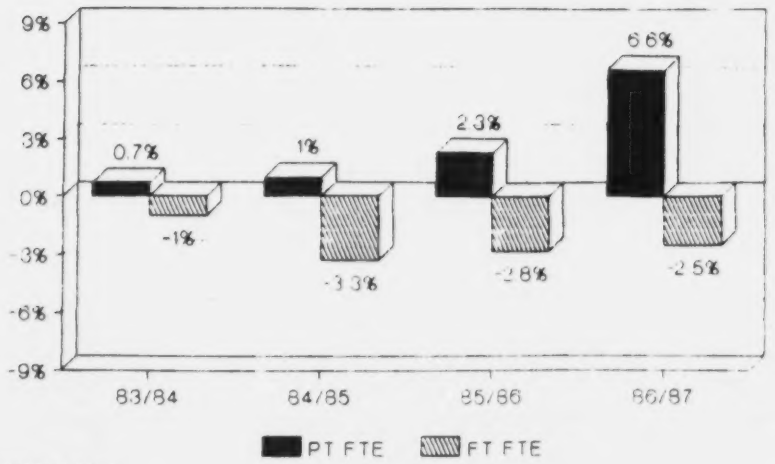
The growth of part-time enrollment parallels similar national trends though the amount of growth was not strong enough in Missouri to offset the declines experienced in full-time enrollment. The potential of this trend continuing into the next decade needs to be carefully monitored as it could seriously affect the delivery of programs and the demand for student services. For example, part-time students require scheduling that will enable them to integrate work obligations with the pursuit of higher education. Furthermore, it is crucial that all students gain a knowledge base that is coherent and interconnected; the danger of degrees being perceived merely as a simple collection of courses is particularly acute for part-time students who considerably lengthen the time period for the completion of course requirements.

PERCENT CHANGE FULL-TIME EQUIVALENT ENROLLMENT
BY STUDENT STATUS
FY 1983 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

| Sector | FY 1983 Part-Time | FY 1983 Full-Time | FY 1987 Part-Time | FY 1987 Full-Time | Part-Time Percent Change 1983-1987 | Full-Time Percent Change 1983-1987 |
|---|---|---|---|---|---|---|
| Lincoln | 398 | 1,717 | 496 | 1,612 | 24.6% | (6.1)% |
| Northeast | 408 | 6,026 | 461 | 5,629 | 13.0% | (6.6)% |
| State Colleges | 1,168 | 6,213 | 1,318 | 5,749 | 12.8% | (7.5)% |
| Regional | 3,015 | 30,206 | 3,264 | 29,198 | 8.3% | (3.3)% |
| University of Missouri | 5,913 | 38,828 | 6,562 | 33,120 | 11.0% | (14.7)% |
| TOTAL | 10,902 | 82,990 | 12,101 | 75,308 | 11.0% | (9.3)% |

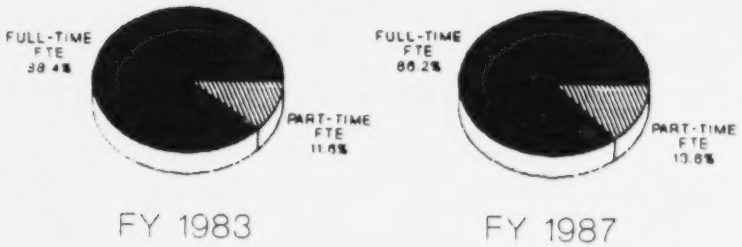
DISPLAY 5

PERCENT CHANGE FTE STUDENTS
BY PART-TIME/FULL-TIME
MISSOURI PUBLIC FOUR-YEAR




DISPLAY 6

# PERCENT PART-TIME/FULL-TIME MISSOURI PUBLIC FOUR-YEAR

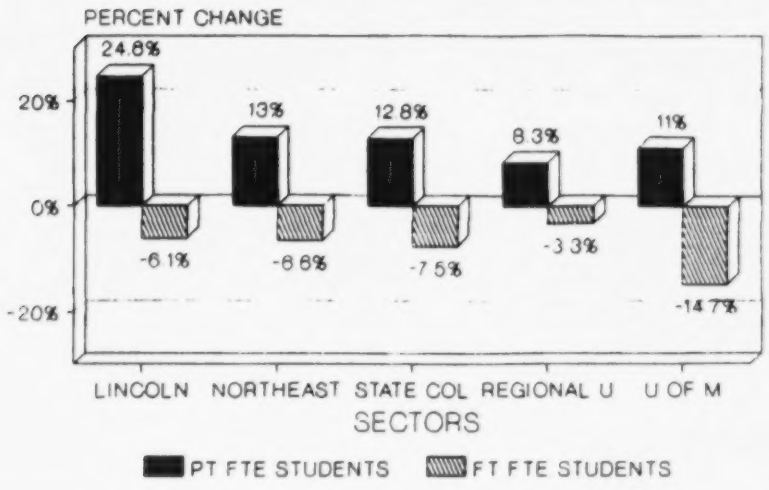



FY 1983 FY 1987

DISPLAY 7

Full-time FTE exhibited some variation across sectors over the trend years. Display 8 demonstrates that there was a consistent decrease in full-time FTE for all sectors with a range of -3.3 percent to -14.7 percent. In each case the fiscal year 1987 full-time FTE enrollment was the lowest point across the five-year period. On the institutional level, however, Southwest increased full-time enrollment though the regional universities collectively decreased. Display 8 also demonstrates the variation in growth patterns for part-time FTE across the sectors. While involving smaller absolute numbers, the range for part-time FTE of 8.3 percent to 24.6 percent was even greater than the range for full-time FTE changes. It is interesting to note that the University of Missouri system was the only sector that experienced continual increases in part-time enrollment over each of the five years. At the institutional level for the University of Missouri system, only UMR and UMSL demonstrated continual part-time enrollment increases during each of the trend years. The increase in part-time enrollment at UMSL accounted for 63.6 percent of the total part-time enrollment gain for the entire University of Missouri system. All sectors, however, exhibited a part-time FTE increase between 1983 and 1987 (exceptions at the institutional level were decreases at Western and Northwest), and all but Northeast had their highest part-time FTE in fiscal year 1987.

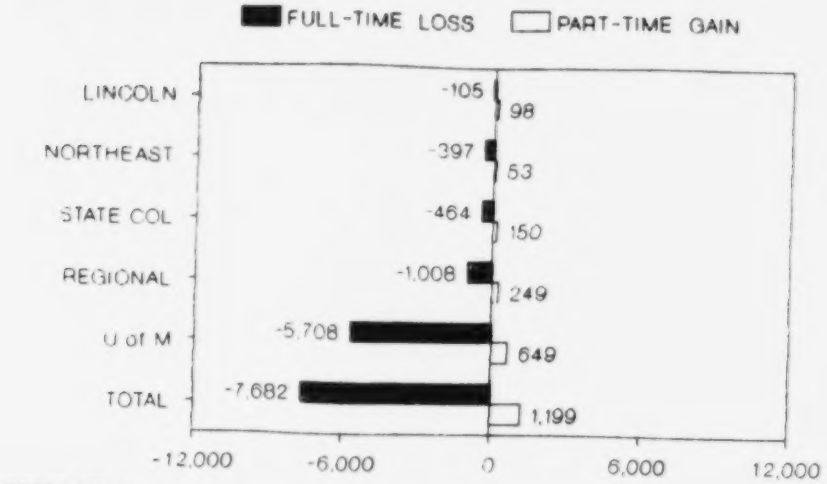
## % CHANGE FTE STUDENTS
## PART- AND FULL-TIME
## FY 1983 - FY 1987
## MISSOURI PUBLIC FOUR-YEAR




DISPLAY 8

Since the base numbers are different for part-time and full-time enrollments and for each institution as well, the percents in Display 8 do not provide a full understanding of the net effect these changes have had on each institution. Display 9 demonstrates that the proportional effect of part-time growth relative to full-time loss varied across the sectors. It is significant that for Lincoln there was almost a 1 to 1 correspondence in full-time and part-time FTE enrollment while for the University of Missouri system the full-time enrollment loss was over eight times the part-time enrollment gain. The relative size of each sector makes these differences that much more dramatic. Taken collectively, Lincoln's absolute sum of part-time growth and full-time loss involved only 203 FTE while the same figure for the University of Missouri system was 6,357 FTE. Clearly, if part-time growth and full-time loss continue into the next decade, careful planning targeted at the specific needs of part-time students will be required while institutions must continually adjust to a declining net resource base.

# FULL-TIME TO PART-TIME FTE LOSS/GAIN
## FY 1983 - FY 1987
## MISSOURI PUBLIC FOUR-YEAR

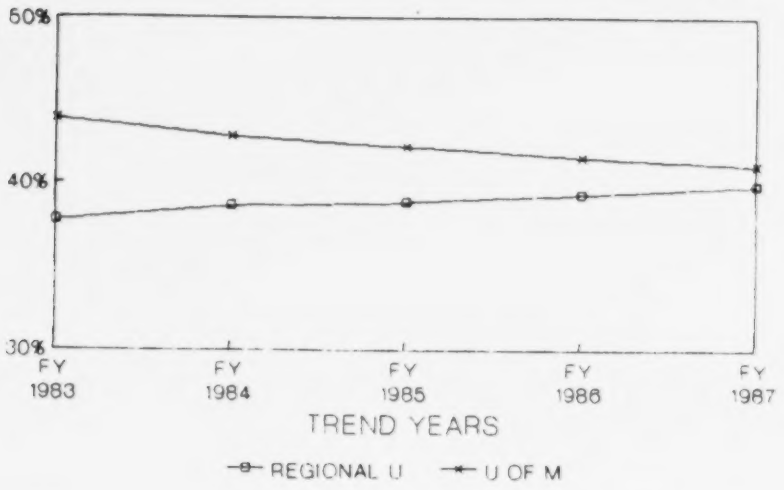



DISPLAY 9

### MARKET SHARE DISTRIBUTION

As might be expected, enrollment declines result in greater competition among institutions for new students as well as renewed efforts to increase retention rates of those students already enrolled. Using total enrollment as a base, the percentage distribution of enrollment between each sector establishes the basis for a market share analysis. Changes in the distribution of student level and student status across sectors provide further insight into possible trends in these enrollment data. While graduate market share remained fairly stable -- changing less than 1 percentage point between fiscal year 1983 and fiscal year 1987 -- undergraduate market share of enrollment did not exhibit similar stability. The most interesting changes at the undergraduate level involve comparisons between the University of Missouri system and regional universities which are presented in Display 10. Clearly, the trend lines for these two sectors have begun to converge. The difference of 6.16 percent in fiscal year 1983 narrowed to 1.27 percent in fiscal year 1987. Slight increases at Southwest coupled with substantial decreases at UMC and UMR were most responsible for this change.

## PERCENT DISTRIBUTION UNDERGRADUATE FTE REGIONALS AND UNIVERSITY OF MISSOURI




DISPLAY 10

Market share analyses using student level and full-time/part-time status simultaneously sharpen the picture of changes taking place between the regional universities and the University of Missouri system. Within the part-time dimension, the University of Missouri system showed a slight increase in its percentage share of undergraduate enrollment while its market share of graduate enrollment decreased by 2.94 percentage points between fiscal year 1983 and fiscal year 1987. At the same time, the regional universities began to demonstrate a reverse pattern, increasing part-time graduate FTE by 1.58 percentage points and decreasing their market share of part-time undergraduate FTE by 1.87 percentage points. The geographic location of UMKC and UMSL in large metropolitan areas which are more likely to draw part-time students appears to be responsible for some of these changes. Regarding full-time enrollment, on the graduate level the University of Missouri system was still dominant and continued to increase its market share; however, on the undergraduate level regional universities not only increased the proportion of their FTE, but by fiscal year 1987 had the largest market share of full-time undergraduate FTE in the entire public four-year system. The large enrollment decline for the University of Missouri system combined with the growth at Southwest accounted for this pattern.

Although market share comparisons between the University of Missouri system and regional universities show some interesting patterns, it is important to keep in context the absolute difference between these two sectors in their market share, especially as it pertains to graduate education. The University of Missouri system accounted for 71.2 percent of graduate education while regional universities accounted for 22.3 percent. If first professional

full-time equivalent enrollment is included, these figures change to 78.4 percent and 16.7 percent respectively. Furthermore, within the University of Missouri sector, graduate and first professional enrollment accounted for 20 percent of their total enrollment while within regional universities, the equivalent figure was 5.? percent. In this context it is clear that the regional state universities remain undergraduate teaching institutions with relatively minor involvement in graduate education.

## SUMMARY OBSERVATIONS

Overall, changes in the actual numbers of full-time equivalent enrollment between fiscal year 1983 and fiscal year 1987 were much less dramatic than the changes that took place in the preceding years. In general, undergraduate enrollment has experienced decline though the rate of decline may have reached a temporary low. At the same time, another decline in the early 1990s can be anticipated unless it is avoided by the combined effect of an increased high school graduation rate, substantial growth in the number of part-time and nontraditional students entering postsecondary institutions, and increases in college retention rates. Despite its decline in the proceeding decade, graduate FTE has been able to remain steady during the years under review. Future trends for graduate education in the state of Missouri are less clear. Technological changes and their impact on the need for continuing education of professionals and other adult learners would suggest a continuation of at least a stable enrollment at the graduate level. Furthermore, recent changes in state teacher certification requirements should have a positive effect on graduate enrollment. However, if a decrease of financial aid programs and alternative employment opportunities persist in combination with rising tuition, then prospective graduate students can be expected to delay their education or attend part-time. Without incentives that make graduate study more attractive, enrollment decline at the graduate level is likely. Furthermore, declines in first professional FTE are part of a national trend that can be expected to continue into the next decade.

Notwithstanding the substantial challenges presented by the enrollment declines that have been absorbed in recent years, changes in the character of the student population suggest a significant trend that should be taken into consideration for future planning efforts. If an increase in part-time enrollment and a corresponding decrease in full-time enrollment continues, it will be imperative for postsecondary institutions to analyze the effectiveness and quality of their academic programs in light of the needs of a new student population. Issues of scheduling, student support services, geographic location of degree programs, and the integration of a curriculum spread out over a longer period of time are illustrations of some of the challenges that will need to be addressed.

Finally, changes in the market share value for various types of students reinforce the differential effect enrollment trends, however slight, have on the different sectors. While specialization of institutional mission is an effective way to reduce unnecessary duplication of effort, geographic location may increase in importance if increasing proportions of prospective students require proximity between work and educational settings.

## SECTION II
## DEGREES CONFERRED
## FY 1983 - FY 1987

The completion of a formal degree program is one indication of successful academic achievement for those students who have graduation as a primary goal. Patterns in formal degrees awarded are also an excellent indication of changes in the academic environment at the institutional level. While degree trends lag enrollment trends by at least four or five years, they provide important data that may directly relate to the pursuit of public policy goals or the creation of new initiatives for higher education in the state of Missouri.

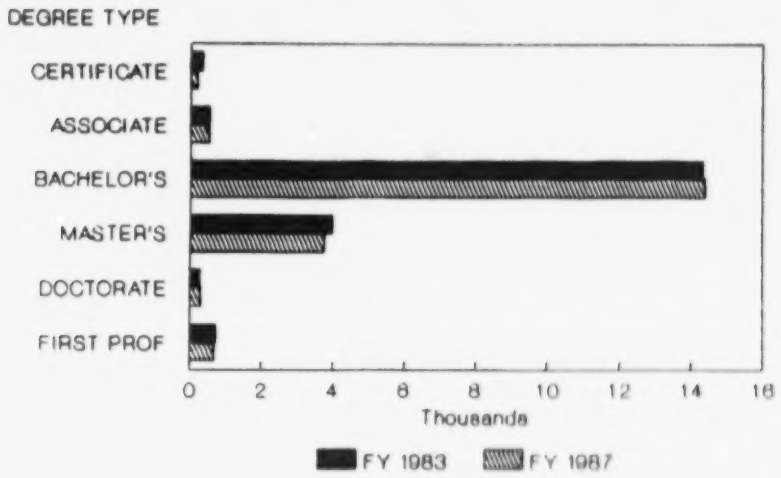
A decrease of 1.8 percent was experienced in the number of degrees awarded across all of Missouri's public four-year institutions from fiscal year 1983 to fiscal year 1987. This is in contrast to the negligible increase (0.9 percent) in degrees awarded during the proceeding ten-year period (1972-1982). The fact that there were increases in headcount enrollment in the preceding decade and that these trends did not result in corresponding increases in degrees conferred in the subsequent years underscores probable changes in the ways students pursue higher education. Although pursuit of a formal degree probably remains a primary goal for the majority of today's students, many more of them are likely to take longer to complete their degree requirements either owing to part-time attendance or to taking a semester or longer off for economic or personal reasons. The enrollment decrease described previously as well as the corresponding changes in student status (increases in part-time enrollment and decreases in full-time enrollment) between fiscal year 1983 and fiscal year 1987 suggest that further declines will be experienced in degrees conferred in the next decade.

### DEGREE LEVELS (AGGREGATE AND SECTOR DIFFERENCES)

As might be expected, the overall decrease in degrees awarded was not evenly distributed across all degree levels. An understanding of the magnitude of these changes and the relative importance of the several degree levels for the public four-year institutions can be seen in Display 11. Clearly, bachelor's and master's degrees constituted the vast majority of degrees granted in the public four-year sector (72.8 percent and 19.0 percent respectively). On both the undergraduate and graduate levels mixed patterns among degree levels were evident. While master's and first professional degrees underwent declines, doctoral degrees actually increased slightly (-5.1 percent, -6.2 percent, and 2.2 percent respectively). At the undergraduate level associate degrees and certificates also declined while bachelor's degrees held steady with a very negligible increase (-3.4 percent, -47.5 percent, and 0.4 percent respectively). Significantly, declines in associate and certificate degrees tended to represent a conscious movement away from involvement in these degree programs in the public four-year sector. Currently, the University of Missouri system and Northeast are no longer involved in either certificate or associate degree

programs while Lincoln does not offer any certificate programs. In addition, among the regional universities Southwest is in the process of phasing out all of its associate degree programs. As institutions continue to update their institutional plans, it is anticipated that there will be less involvement by many of the four-year institutions in these degrees which tend to be considered more appropriate for two-year institutions. Exceptions will be Southern and Western which are required by statute to continue to offer certificate and associate degree programs.

## DEGREES CONFERRED
## FY 1983 - FY 1987
## MISSOURI PUBLIC FOUR-YEAR




DISPLAY 11

The amount of variability in the number of degrees conferred among the different sectors can be seen in Displays 12 and 13 which provide data on percent change and absolute number change in degrees conferred between fiscal year 1983 to fiscal year 1987. Two important patterns emerge. First, there is a fairly large range of over 16 percentage points between the low and high percentages in Display 12 for the several sectors. Northeast and the state colleges both experienced increases during this time period while the other three sectors underwent decreases. Institutional differences such as size, selectivity, and location alone do not help to clarify why this pattern emerges. Environmental factors involving student faculty interactions, advising systems, and student culture may be influencing the differences in percent change; however, further analysis at the institutional level would be required to draw these conclusions. A second pattern of interest

involves comparisons between the regional universities and the University of Missouri system in terms of bachelor's and master's degrees. At the bachelor's level the regional universities decreased slightly (2.2 percent) while the University of Missouri system was fairly stable. In contrast, on the master's level the regional universities have maintained stability (0.2 percent increase) while the University of Missouri system underwent a significant decline (-9.5%). The lack of consistency between these two sectors is further demonstration of the need for institutions to be responsive to shifting student interests that are difficult to predict.

PERCENT CHANGE IN DEGREES CONFERRED
FY 1983 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

| Sector | Cert | A | B | M | D | FP | Total |
|---|---|---|---|---|---|---|---|
| Lincoln | N/A | 20.3% | (18.8)% | (3.4)% | N/A | N/A | (8.4)% |
| Northeast | (44.4)% | N/A | 17.2% | 9.2% | N/A | N/A | 8.2% |
| State College | 100.0% | (3.5)% | 7.2% | N/A | N/A | N/A | 4.9% |
| Regional Universities | (38.9)% | (12.5)% | (2.2)% | 0.2% | N/A | N/A | (2.6)% |
| University of Missouri | (90.2)% | (100.0)% | (0.1)% | (9.5)% | 2.2% | (6.2)% | (3.0)% |
| TOTAL | (47.5)% | (3.4)% | 0.4% | (5.1)% | 2.2% | (6.2)% | (1.8)% |

DISPLAY 12

ABSOLUTE NUMBER CHANGE IN DEGREES CONFERRED
FY 1983 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

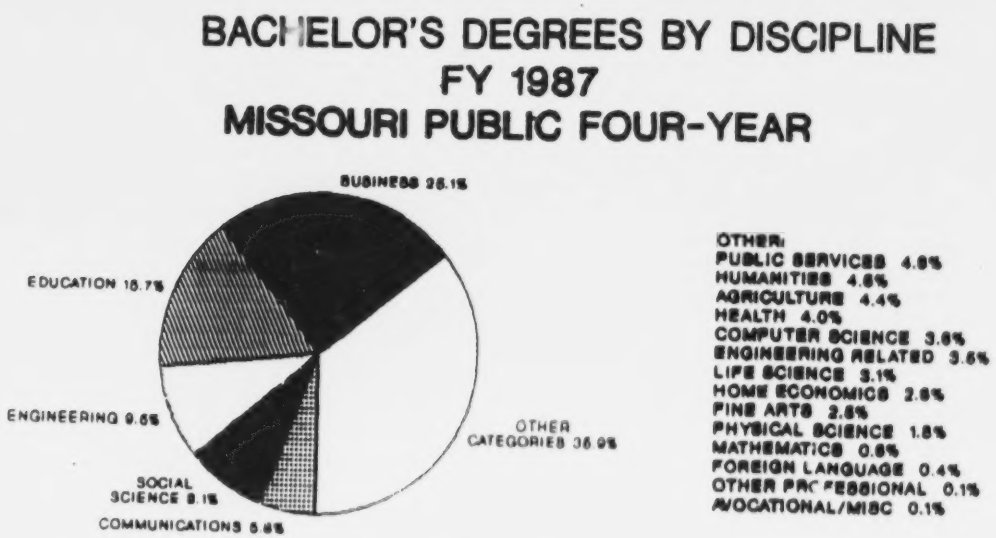
| Sector | Cert | A | B | M | D | FP | Total |
|---|---|---|---|---|---|---|---|
| Lincoln | N/A | 16 | (46) | (2) | N/A | N/A | (32) |
| Northeast | (75) | N/A | 164 | 26 | N/A | N/A | 115 |
| State College | 2 | (9) | 61 | N/A | N/A | N/A | 54 |
| Regional Universities | (42) | (24) | (117) | 2 | N/A | N/A | (181) |
| University of Missouri | (37) | (1) | (9) | (229) | 6 | (45) | (315) |
| TOTAL | (152) | (18) | 53 | (203) | 6 | (45) | (359) |

DISPLAY 13

## DISCIPLINE DIFFERENCES

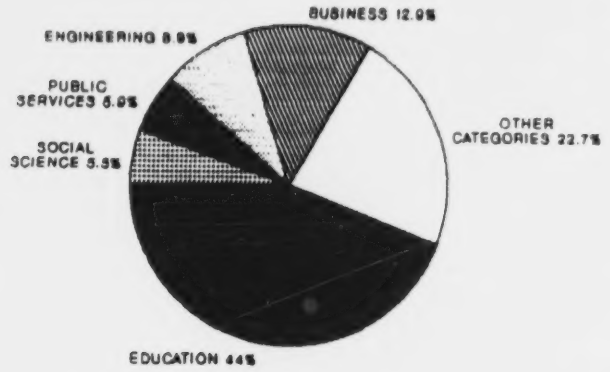
Despite the overall decrease in degree productivity, only some disciplines underwent declines while others experienced growth as a result of shifts in student demand. An analysis of total degrees conferred by discipline clusters at all degree levels demonstrates that 13 discipline areas declined in degree productivity while seven experienced growth. Across the total public four-year system, agriculture experienced the largest decline (-22.3%) while computer science had the most growth (35.2%). This pattern holds for both percentage change and absolute number change. Individual sectors, of course, experienced variations from this pattern.

Displays 14-17 present the distribution of degrees conferred in fiscal year 1987 across all sectors for bachelor's, master's, doctor's, and total degrees. The graph for total degrees includes the above degrees as well as certificate's, associate's, and first professional degrees. At each degree level, the three most productive disciplines accounted for over fifty percent of all degrees conferred at that level. As a general pattern, four disciplines -- business, education, engineering, and social science -- tended to appear as the most active areas regardless of degree level though the relative size of each discipline and its rank order varied. Exceptions to this pattern included public services at the master's level as the fourth most productive area just above social science; and at the doctoral level, physical science as the fourth most productive area well above business which was the least productive doctoral discipline. Despite differences across degree level, clearly business, education, engineering and social science continue to be the most productive degree areas at Missouri's public four-year institutions.




DISPLAY 14

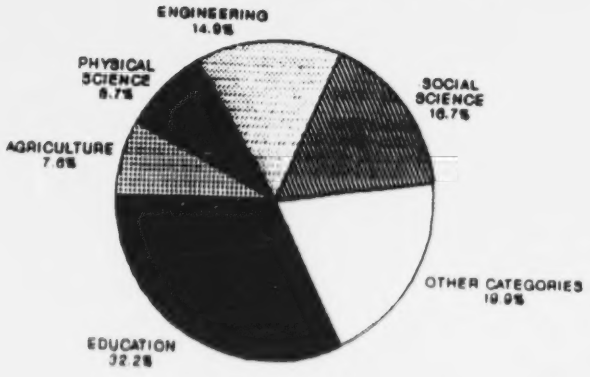
# MASTER'S DEGREES BY DISCIPLINE
# FY 1987
# MISSOURI PUBLIC FOUR-YEAR




OTHER:
HEALTH 3.7%
HUMANITIES 2.6%
COMMUNICATIONS 2.3%
COMPUTER SCIENCE 2.1%
FINE ARTS 2.1%
AGRICULTURE 1.9%
OTHER PROFESSIONAL 1.8%
PHYSICAL SCIENCE 1.6%
LIFE SCIENCE 1.6%
ENGINEERING RELATED 1.6%
MATHEMATICS 0.8%
VOCATIONAL/TECHNICAL 0.3%
HOME ECONOMICS 0.3%
FOREIGN LANGUAGE 0.1%

DISPLAY 15

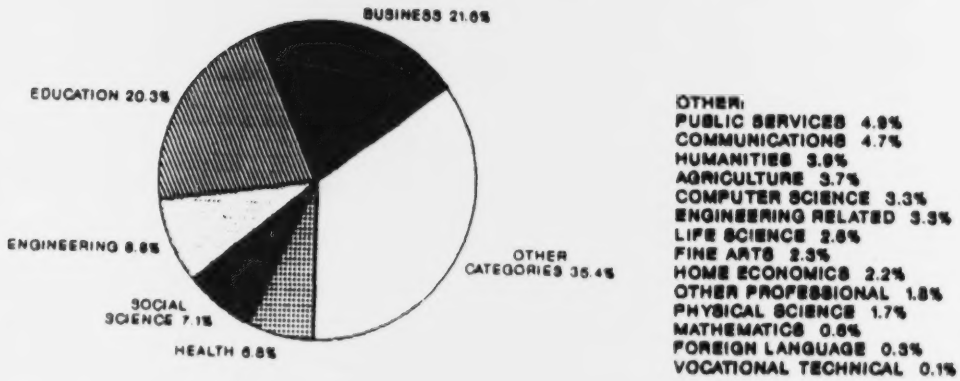
# DOCTORATE DEGREES BY DISCIPLINE
# FY 1987
# MISSOURI PUBLIC FOUR-YEAR




OTHER:
HEALTH 3.6%
HUMANITIES 2.9%
FINE ARTS 2.9%
LIFE SCIENCE 2.6%
MATHEMATICS 2.6%
HOME ECONOMICS 2.2%
COMMUNICATIONS 2.2%
COMPUTER SCIENCE 1.8%
BUSINESS 1.4%

DISPLAY 16

# TOTAL DEGREES BY DISCIPLINE
# FY 1987
# MISSOURI PUBLIC FOUR-YEAR




DISPLAY 17

An analysis of bachelor's and master's degree productivity for different disciplines between fiscal year 1983 and fiscal year 1987 demonstrates the continual shift of student demand. On the bachelor's level 10 disciplines underwent increases, nine experienced decreases, and one remained unchanged while on the master's level 13 disciplines decreased, five increased, one remained virtually unchanged, and one area (avocational miscellaneous) was not applicable. Display 18 presents the four disciplines at each level with the largest absolute change during the trend years. The large decreases in agriculture may partially represent a reaction by students to the perceived economic difficulties associated with careers in this field while decreases in engineering, engineering related, health, social science, and public services may be effected by students' perceptions of an oversupply of professionals in these areas.

FOUR DISCIPLINES WITH THE LARGEST CHANGES
IN ACTUAL DEGREES CONFERRED
FY 1983 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

Bachelor

| Increased | Decreased |
|---|---|
| Computer Science (167) | Agriculture (-175) |
| Business (154) | Engineering (-138) |
| Humanities General (150) | Health (-109) |
| Communications (83) | Education (-54) |

Master

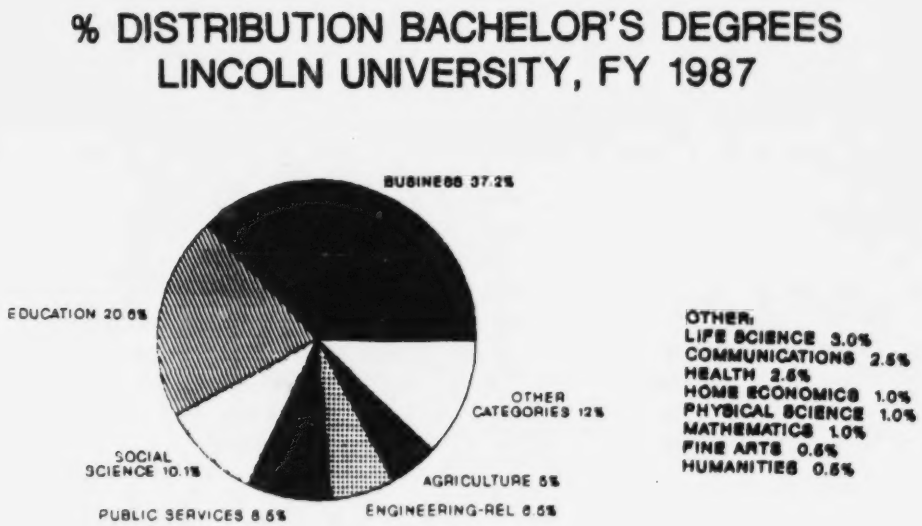
| Increased | Decreased |
|---|---|
| Business (22) | Social Science (-80) |
| Fine Arts (16) | Engineering Related (-35) |
| Computer Science (9) | Agriculture (-34) |
| Education (4) | Public Services (-25) |

DISPLAY 18

Decreases in the social science area continue a trend which began in the previous decade. Although the changes in education are small relative to the total number of degrees conferred in this discipline, it is important to note that this area continues to decrease on the bachelor's level -- a trend that began in the previous decade -- while showing a negligible increase at the master's level. Despite the overwhelming popularity of education as a discipline in Missouri's public four-year institutions, continual decreases in this area may eventually have a negative effect on the supply of trained teachers in the state. The negligible increase at the master's level may represent a return to formal education by teachers in the field interested in upgrading their credentials for personal or economic incentives. Furthermore, since Missouri has taken steps to require the master's degree for the highest level of certification, additional increases may be likely in the future. The increases in computer science, business, and fine arts are not surprising and can also be viewed as a continuation of a trend established in the previous decade. National trends suggest, however, that at least in the area of computer science a plateau has been reached, and some declines have already been experienced. The inclusion of general humanities and communications as new growth areas may represent a return to the popularity of the liberal arts reminiscent of earlier decades. The primary conclusion to be drawn from these trends is that continual shifts in discipline popularity every decade or two provide a constant challenge to the institutions in the reallocation of resources to meet student demand.

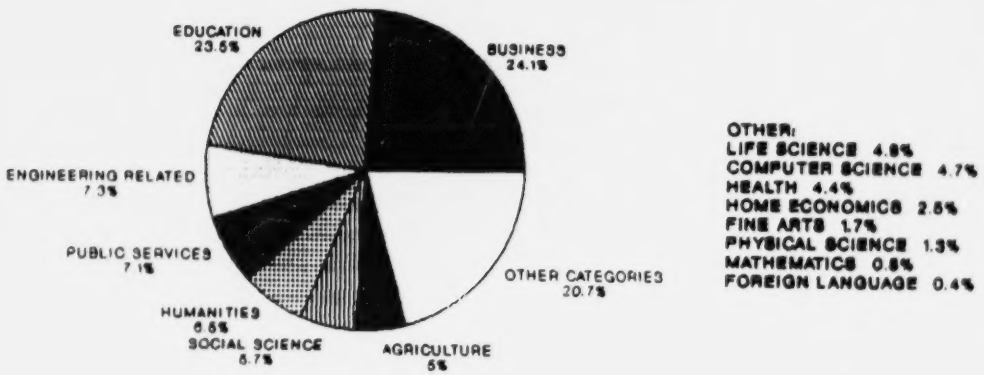
## DISCIPLINE DIFFERENCES BY SECTOR

Displays 19-27 present the distribution of the discipline clusters for bachelor's and master's degrees respectively within each sector for fiscal year 1987. While the high demand disciplines tend to be quite similar across the different sectors, there was some variation in the relative demand for a specific discipline within each sector. At the bachelor's level, it is significant that the top three disciplines in each sector accounted for over 50 percent of the degrees conferred within that sector and that business was the most productive discipline in every sector. At the master's level, education accounted for over 50 percent of the degrees in each sector except at the University of Missouri system where it accounted for 38.2 percent. Nevertheless, education and then business were the most productive degree areas at the master's degree level in all sectors. In addition to the general popularity of these disciplines, the relatively small number of graduate degree areas at Lincoln and Northeast (3 and 7 respectively) was partially responsible for the high concentration in education and business in these two sectors. The "normal school" heritage of the regional universities partially explains the dominance of master's degrees in education in that sector. Furthermore, state statute restricts somewhat the range of graduate degree programs offered by the regional universities.



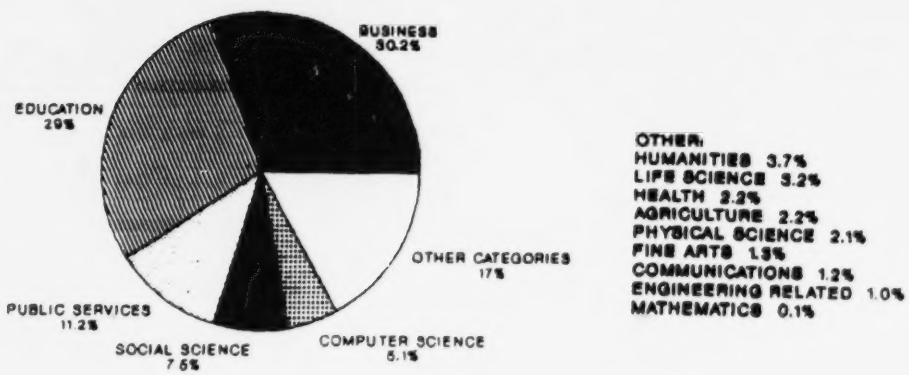

DISPLAY 19

# % DISTRIBUTION BACHELOR'S DEGREES NORTHEAST MISSOURI STATE, FY 1987



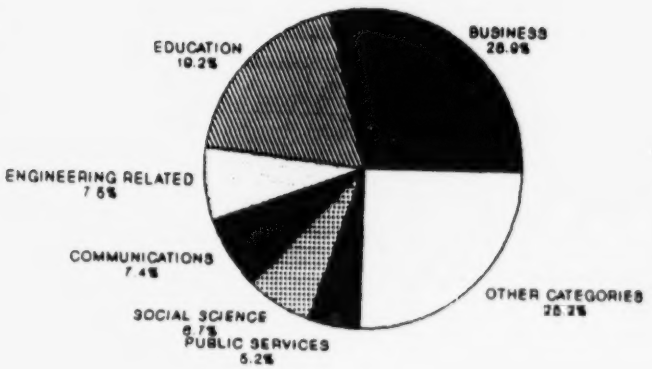

DISPLAY 20

# % DISTRIBUTION BACHELOR'S DEGREES STATE COLLEGES, FY 1987




DISPLAY 21

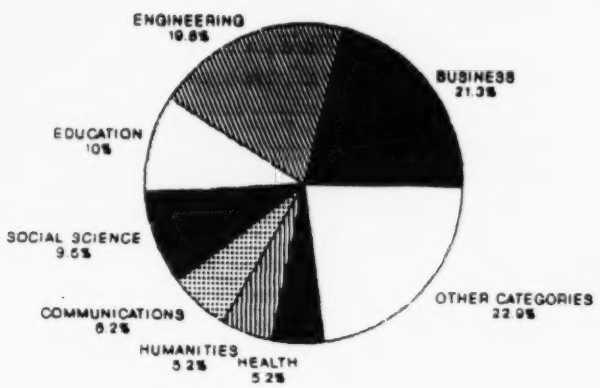
# % DISTRIBUTION BACHELOR'S DEGREES REGIONAL UNIVERSITIES, FY 1987




OTHER:
AGRICULTURE 4.1%
HOME ECONOMICS 3.8%
HUMANITIES 3.6%
COMPUTER SCIENCE 3.3%
HEALTH 2.8%
FINE ARTS 2.7%
LIFE SCIENCE 1.8%
PHYSICAL SCIENCE 1.7%
MATHEMATICS 0.7%
FOREIGN LANGUAGE 0.4%
OTHER PROFESSIONAL 0.3%
AVOCATIONAL/MISC 0.2%
ENGINEERING 0.1%

DISPLAY 22

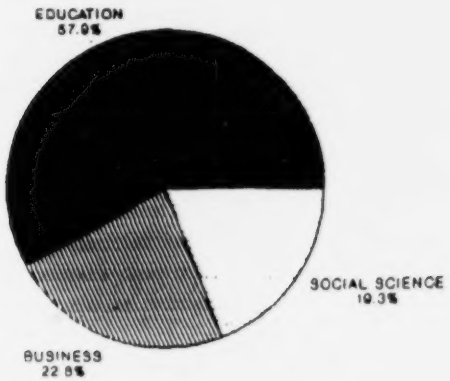
# % DISTRIBUTION BACHELOR'S DEGREES UNIVERSITY OF MISSOURI, FY 1987




OTHER:
AGRICULTURE 4.7%
LIFE SCIENCE 3.7%
COMPUTER SCIENCE 3.6%
PUBLIC SERVICES 2.9%
FINE ARTS 2.7%
HOME ECONOMICS 2.3%
PHYSICAL SCIENCE 1.9%
FOREIGN LANGUAGE 0.8%
MATHEMATICS 0.8%

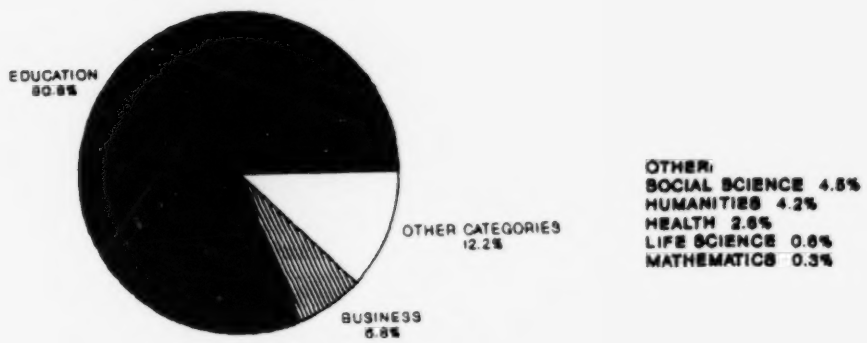
DISPLAY 23

# % DISTRIBUTION MASTER'S DEGREES
# LINCOLN UNIVERSITY, FY 1987



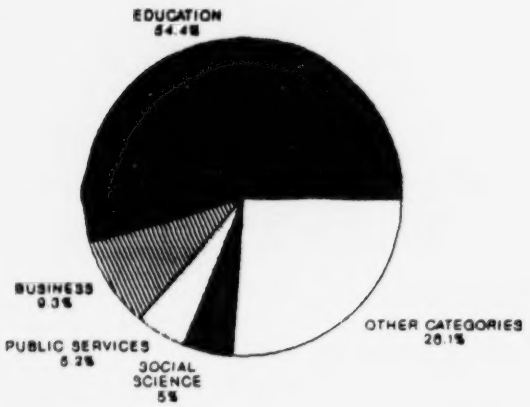

DISPLAY 24

# % DISTRIBUTION MASTER'S DEGREES
# NORTHEAST MISSOURI STATE, FY 1987




DISPLAY 25

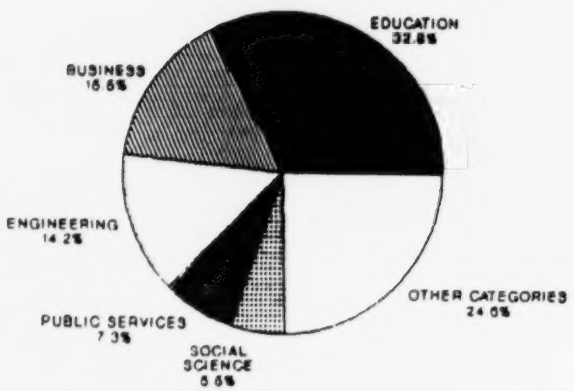
# % DISTRIBUTION MASTER'S DEGREES REGIONAL UNIVERSITIES, FY 1987




OTHER:
ENGINEERING RELATED 4.8%
HUMANITIES 4.6%
HEALTH 3.7%
FINE ARTS 2.7%
COMPUTER SCIENCE 1.9%
ENGINEERING 1.8%
LIFE SCIENCE 1.7%
OTHER PROFESSIONAL 1.4%
COMMUNICATIONS 1.2%
VOCATIONAL TECHNICAL 1.0%
AGRICULTURE 1.0%
HOME ECONOMICS 0.2%
MATHEMATICS 0.2%

DISPLAY 26

# % DISTRIBUTION MASTER'S DEGREES UNIVERSITY OF MISSOURI, FY 1987




OTHER:
HEALTH 4.0%
COMMUNICATIONS 3.3%
PHYSICAL SCIENCE 2.6%
AGRICULTURE 2.7%
COMPUTER SCIENCE 2.6%
OTHER PROFESSIONAL 2.3%
FINE ARTS 2.0%
LIFE SCIENCE 1.7%
HUMANITIES 1.3%
MATHEMATICS 1.2%
HOME ECONOMICS 0.5%
FOREIGN LANGUAGE 0.2%

DISPLAY 27

Despite the apparent similarity across sectors in discipline demand, changes in degree productivity between fiscal year 1983 and fiscal year 1987 were not consistent across the sectors in the majority of disciplines. At the bachelor's level, most disciplines increased in some sectors while decreasing in other sectors. Exceptions to this pattern included increases in computer science across all sectors and foreign language degrees which increased at Northeast and the University of Missouri system but remained virtually unchanged at the regional universities. At the master's level four disciplines experienced decreases (agriculture, mathematics, physical science, and social science) while one discipline had increases (computer science) across all sectors offering these degrees. The remaining discipline areas showed variable patterns except for three disciplines (engineering related, foreign language, and vocational/technical) which were a degree option in only one sector.

SUMMARY OBSERVATIONS

As is true on the national level, the great majority of degrees conferred in Missouri concentrated in a few disciplines. At Missouri's public four-year institutions, business, education, engineering, and social science were the most popular disciplines. While engineering was offered by the University of Missouri system alone, the other disciplines were in demand both at the bachelor's and the master's levels across all sectors. Nevertheless, despite the appearance of homogeneity, variable shifts in degree productivity took place across the sectors requiring significant resource management decisions to meet student demand.

The movement away from awarding certificates and associate degrees by public four-year institutions represents efforts to be responsive to refined institutional missions. The recent charge for Northeast to become the public liberal arts and sciences higher education institution of Missouri should further influence the pattern of degrees conferred in the next decade. Within the public four-year system, some overlap of degree programs offered is necessary; however, continual updates in institutional mission statements should ideally serve to increase specialization within sectors and result in greater diversity among institutions.

While growth and loss patterns for particular disciplines provide a barometer of student interest, it is important to remember that trends in degrees conferred lag enrollment trends by at least four or five years. At the same time, the consistency, magnitude, and direction of the patterns of change may suggest important information that can be integrated into management decisions at the institutional level. Several examples may suffice to reinforce this point. First, while fine arts has consistently increased at the master's level, the absolute number of fine arts degrees remains moderate relative to other degree programs. Decisions to increase resource allocation to this program area would require careful analysis of a program's ability to grow within the present level of funding. Second, the continual decrease in agriculture at the regional universities and the University of Missouri system suggests the importance of rigorous recruitment efforts aimed at providing

prospective students with an understanding of the opportunities associated with this discipline. If degree productivity continues to decrease in this area, innovative reallocation of the substantial resources associated with agricultural programs will become increasingly necessary. Finally, while continual growth in computer science may require additional resources, the allocation of new resources based on student demand should involve sound projections that attempt to account for temporary fads in students' choices of major. From other data available to CBHE staff, it seems that the number of computer science majors has already stabilized or begun a decline. In the case of computer science it is also important to analyze carefully differences between a demand for more computer science degrees versus an interest in the integration of computer technology and software into other disciplines in the curriculum.

In general, the overall decrease in degree productivity that took place between fiscal year 1983 and fiscal year 1987 can be expected to continue into the next decade as the total number of traditional college age students continues to decline and as the proportion of part-time students continues to increase. At the same time, increased efforts at retention of students already enrolled may serve to counterbalance the negative effect of reduced enrollments on degree productivity and the consequent availability of well trained citizens to meet the state's needs.

## SECTION III
## MINORITY PARTICIPATION
## FY 1983 - FY 1987

There is a growing concern at both the state and national levels about the educational experiences and ultimately the educational attainments of minority students. This issue is particularly important as the proportion of minorities in the general population increases and as it becomes increasingly apparent that the future economic health of the country will be linked to the educational achievements of minority youth. Nationally, in 1980 minorities comprised 15.5 percent of all 18-24 year-olds; by the year 2025, census data projections indicate this figure will increase to 39.2 percent. While high school graduation rates of minorities have increased significantly over the past twenty years, the high school completion rate of minorities still lags that of whites. National data suggest that the proportion of Black and Hispanic college-aged youth pursuing higher education peaked in the mid 1970s and has declined in subsequent years. National studies also indicate that Asian students do not fit this pattern; rather, this minority group continues to increase significantly its participation in postsecondary educational experiences.

The race distribution of Missouri's population is presented in Display 28. According to the 1980 census, Missouri's Black population was 10.5 percent of the state total, or only slightly lower than the proportion of Blacks in the total United States population (11.7 percent). The remaining race categories for Missouri were all less than 0.1 percent except American Indian which was .25 percent and the residual category of other races which was .44 percent. Display 28 does not include Hispanic as a category since it is defined as an ethnic classification rather than a racial category and is reported as separate information by the Bureau of the Census. In contrast to the data on race, only 1.1 percent of Missouri's population was of Spanish origin in 1980 compared to 6.4 percent for the United States as a whole.

RACE COMPOSITION MISSOURI'S POPULATION: 1980

| Category | Absolute Number | Percent |
|---|---|---|
| White | 4,345,521 | 88.38% |
| Black | 514,276 | 10.46 |
| American Indian | 12,129 | 0.25 |
| Eskimo | 119 | 0.00 |
| Aleut | 73 | 0.00 |
| Japanese | 2,649 | 0.05 |
| Chinese | 4,280 | 0.09 |
| Filipino | 4,029 | 0.09 |
| Korean | 3,519 | 0.07 |
| Asian Indian | 4,099 | 0.08 |
| Vietnamese | 3,179 | 0.06 |
| Hawaiian | 633 | 0.01 |
| Guamian | 230 | 0.01 |
| Samoan | 478 | 0.01 |
| Other Races | 21,472 | 0.44 |
| TOTAL | 4,916,686 | 100.00% |

Source: U.S. Bureau of the Census, 1980 Census of Population, Federal Report PC(1)-B27, General Population Characteristics; Missouri; Washington, D.C.; Government Printing Office, 1982, Table 15 and Table 16.

DISPLAY 28

Since the overwhelming majority of Missouri's minority population is Black, the following comments will highlight the participation of Black students in Missouri's public four-year institutions during the trend years fiscal year 1983 - fiscal year 1987. Despite the relatively small number of students within other minority categories, data will be included in the displays consistent with the federal Department of Education's classification of minority students (which unlike the Census Bureau combines Hispanic data with race data). Headcount rather than full-time equivalent enrollment will be used as the unit of analysis owing to data availability. It is important to note that since Blacks have a relatively higher participation rate at two-year rather than four-year institutions, many of the comparisons included in this section could differ significantly if the public two-year institutions were included in this analysis.

In fiscal year 1987 minority students accounted for 10.7 percent of all students enrolled in Missouri's public four-year institutions while white Non-Hispanic students accounted for 89.3 percent. Black students represented just over half of the minority students (5.7 percent) enrolled while other classifications (nonresident alien, American Indian or Alaskan Native, Asian or Pacific Islander, and Hispanic) totaled 5.0 percent. These distributions have remained relatively stable over time, changing less than 1 percent between fiscal year 1983 and fiscal year 1987. Display 29 presents

percent changes in headcount enrollment during the trend years by race/ethnic category for all institutions.

PERCENT CHANGE HEADCOUNT ENROLLMENT
BY RACE/ETHNIC CLASSIFICATION
FY 1983 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

| | FY 1983 | FY 1987 | % Change |
|---|---|---|---|
| Black | 6,599 | 6,309 | (4.4) |
| Other Minority | | | |
| Nonresident Alien | 3,097 | 3,152 | 1.8 |
| American Indian | 419 | 324 | (22.7) |
| Asian | 1,081 | 1,341 | 24.1 |
| Hispanic | 732 | 713 | (2.6) |
| Total Other Minority | 5,329 | 5,530 | 3.8 |
| White | 102,109 | 98,844 | (3.2) |
| TOTAL | 114,037 | 110,683 | (2.9) |

DISPLAY 29

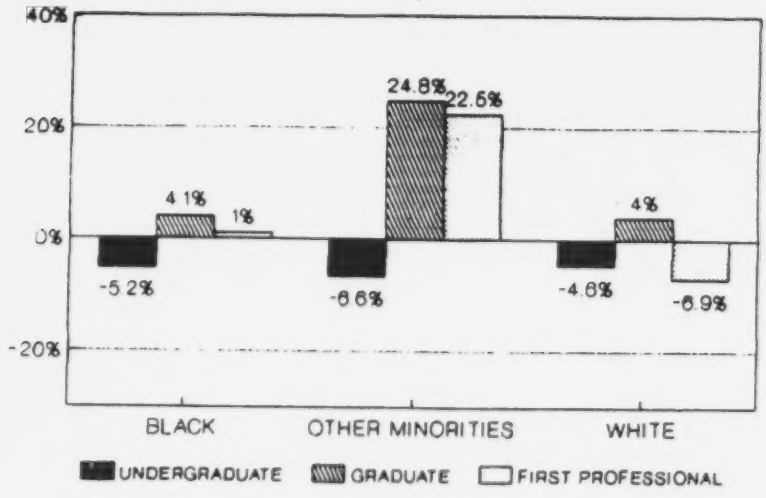
Although decreases could be anticipated based on the total enrollment decline of 2.9 percent for all students, Display 29 demonstrates differences between the race/ethnic classifications. It is significant that Black and white enrollments have dropped (-4.4 percent and -3.2 percent respectively) while the other minorities actually experienced a 3.8 percent increase. Within the "other minority" category, substantial increases of Asian students accounted for this increase. Based on the relatively small proportion of other minorities in Missouri's population, it may be possible that the growth in this area is from out-of-state students, but the data available does not address this issue. The fact that Missouri's Black population is expected to increase in the next decade suggests that a growing segment of Missouri's potentially productive population may not benefit from the opportunities offered by Missouri's public four-year institutions unless this trend is reversed.

STUDENT LEVEL

A more detailed analysis of percent changes between fiscal year 1983 and fiscal year 1987 for each student level by race/ethnic classification is presented in Display 30. At the undergraduate level both Blacks and majority whites decreased at similar rates though the rate for Blacks was slightly higher, 0.6 percent. It is significant to note that the decline for the "Other Minority" classification was not experienced by Asian students who actually increased their participation by 21.1 percent during the trend years. Increases at the graduate level were also similar for Black

and white student headcount (4.1 and 4.0 respectively) while the other minority category showed a substantial increase (24.8 percent). Within the other minority category, Asian students again had the highest rate of change closely followed by nonresident aliens. Although first professional headcount enrollment involved a relatively small number of students, comparisons in percent changes demonstrated large variability. Blacks remained stable over the trend years, increasing only one percent, while whites decreased 6.9 percent and other minorities increased 22.5 percent. Taken collectively, these patterns highlight the similarity between Black and white students at the undergraduate and graduate levels and the consistency of substantial increases in Asian students across all levels.

## RACE/ETHNIC PERCENT CHANGE BY LEVEL
## FY 1983 - FY 1987
## MISSOURI PUBLIC FOUR-YEAR

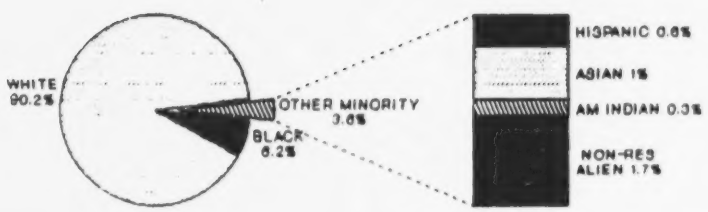



DISPLAY 30

The percent distributions of race/ethnic classifications for each student level for fiscal year 1987 are presented in Displays 31, 32 and 33. While whites were clearly the majority across all three classifications, it is significant that Blacks constituted only 6.2 percent of all undergraduate students while they represented 10.5 percent of Missouri's population at large. Furthermore, a comparison between Blacks and other minorities emphasizes the low participation of Blacks in graduate and first professional programs (3.3 percent and 3.8 percent respectively) at Missouri's public four-year institutions. At the graduate level the percent of other minorities was almost four times the percent for Blacks and was accounted for primarily by the nonresident alien classification (9.8

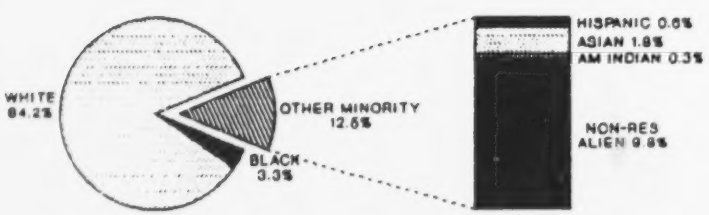
percent). In addition, other minorities had almost twice as many students enrolled at the first professional level in comparison to Blacks.

## RACE/ETHNIC UNDERGRADUATE ENROLLMENT
## FY 1987
## MISSOURI PUBLIC FOUR-YEAR



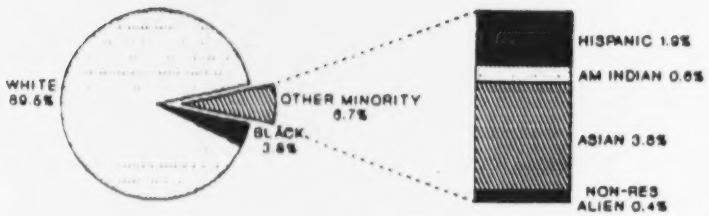

DISPLAY 31

## RACE/ETHNIC GRADUATE ENROLLMENT
## FY 1987
## MISSOURI PUBLIC FOUR-YEAR




DISPLAY 32

## RACE/ETHNIC FIRST PROF ENROLLMENT
## FY 1987
## MISSOURI PUBLIC FOUR-YEAR




DISPLAY 33

Although reasons for these patterns are not clear from these data, national studies have emphasized the high drop out rate of Blacks at the secondary and postsecondary levels. Missouri's percent distribution alone suggests the importance of further study regarding the participation rates of Blacks across all three student levels.

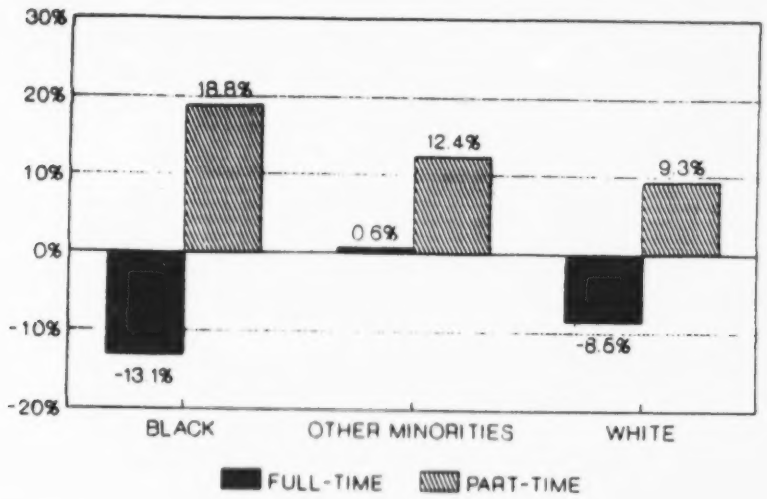
STUDENT STATUS

The percent changes of race/ethnic classifications in part-time and full-time headcount between fiscal year 1983 and fiscal vear 1987 are presented in Display 34. Consistent with earlier trends reported, these data exhibited increases in the number of part-time minority students (10.0 percent) and decreases in the number of full-time minority students (-8.3 percent). While Black students fit the general pattern, their rate of change was greater in comparison to whites or the "other minority" category. The decline of 13.1 percent for Black full-time students was over one and a half times the 8.5 percent decline for white full-time students and over 20 times the rate of 0.6 percent increase for other minorities.

Furthermore, the increase of 18.8 percent for Black part-time students was over twice the rate for white students. At the same time, the proportion of Black and white part-time aggregate enrollment for fiscal year 1987 was more comparable (34.0 percent and 30.4 percent respectively). These observed trends underscore part-time status as a potential growth area that will continue into the next decade. While these data do not permit further interpretation of these trends, it is clear that the special needs of part-time students, especially part-time minority students should

be taken into consideration in the deliberations of the minority student task force established by the CBHE.

## RACE/ETHNIC PERCENT CHANGE BY STATUS
## FY 1983 - FY 1987
## MISSOURI PUBLIC FOUR-YEAR




DISPLAY 34

### SECTOR DIFFERENCES

While all of Missouri's public four-year institutions are active in their attempts to recruit minority students, two of the states 13 four-year campuses have had an historical tradition of serving Black students (Lincoln and Harris-Stowe). The residential patterns of Blacks is another factor that has traditionally influenced the distribution of Black students across sectors. In 1980, of Missouri's 115 counties, only seven had a proportion of Black population greater than 10 percent. The overwhelming majority of Blacks in 1980 lived in the urban areas of Missouri (96.1 percent), concentrating primarily in two geographical locations (St. Louis and Kansas City). In addition, Blacks were also heavily represented in the Bootheel region, a rural and relatively impoverished area of the state. Percent changes in Black student enrollment between fiscal year 1983 and fiscal year 1987 across the sectors as presented in Display 35 illustrates some unanticipated patterns. Although Black students as a group declined 4.4 percent in their participation at Missouri public four-year institutions, the rate of change was extremely variable across the sectors. During this period of general enrollment decline, both regional universities and state colleges experienced growth in the number of Black students (23.9 percent and 14.9 percent respectively). With

regard to the loss of Black students, although Northeast experienced the largest decline (-31.7 percent), their base number was quite small so the absolute change resulted in only 65 fewer students. Lincoln also experienced a sizeable decline (21.2 percent) which was a higher rate than the corresponding figure for the University of Missouri system (-14.3 percent). In addition, it is interesting to note that more detailed data reveal that Lincoln also experienced a 7 percent increase in the number of white students during the same time period.

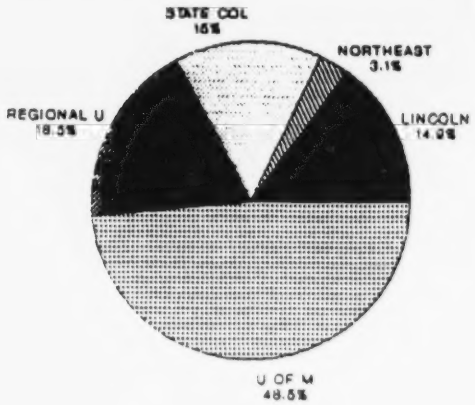
PERCENT CHANGE BLACK ENROLLMENT
FY 1983 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

| | FY 1983 | FY 1987 | % CHANGE |
|---|---|---|---|
| Lincoln | 980 | 772 | (21.2) |
| Northeast | 205 | 140 | (31.7) |
| State College | 991 | 1139 | 14.9 |
| Regional Universities | 1224 | 1516 | 23.9 |
| University of Missouri | 3199 | 2742 | (14.3) |
| TOTAL | 6599 | 6309 | (4.4) |

DISPLAY 35

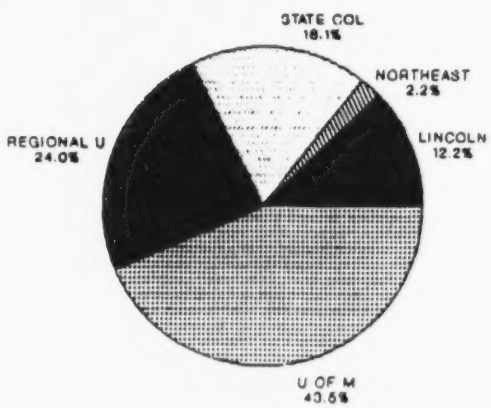
The distribution of Black students across sectors for fiscal year 1983 and fiscal year 1987 are presented in Displays 36 and 37. While these changes in market share value for each sector reflect the percent changes in headcount enrollment described above, it is important to note that the University of Missouri system was the sector attracting the largest number of Black students. Despite a 5.5 percentage point increase by regional universities, the University of Missouri system enrolled 1.8 times as many Black students as the regional universities in fiscal year 1987. As the challenge to attract Black students to Missouri's public four-year institutions heightens, a clearer understanding is needed regarding what factors influence the choice made by minorities in general and Blacks in particular to attend specific institutions.

## DISTRIBUTION OF BLACK ENROLLMENT
## BY SECTOR FY 1983
## MISSOURI PUBLIC FOUR-YEAR




DISPLAY 36

## DISTRIBUTION OF BLACK ENROLLMENT
## BY SECTOR FY 1987
## MISSOURI PUBLIC FOUR-YEAR




DISPLAY 37

## DEGREES CONFERRED

The race/ethnic distribution of degrees conferred and the race/ethnic distribution of enrollment at Missouri's public four-year institutions in fiscal year 1987 are presented in Displays 38 and 39. The percentage of degrees received by white students (90.3 percent) is not surprising since it closely matches their percent of the total enrollment which was 89.3. Other classifications showed similar patterns between their percent of degrees conferred and their percent of total enrollments except for Blacks and nonresident aliens. While Blacks constituted 5.7 percent of the enrollments in fiscal year 1987, they received only 3.5 percent of all degrees. In contrast, nonresident aliens were only 2.8 percent of the enrollments while receiving 4.1 percent of the degrees. Although trends in degrees conferred lag enrollment trends by four or five years, the race/ethnic enrollment distribution has been relatively stable during this five-year period. While not conclusive, these data target the possibility of a lower completion rate for Black students compared to other minorities at Missouri's public four-year institutions. Although some students may not have internalized the goal of degree completion while others may have left the system or temporarily halted their postsecondary educational pursuit for other reasons, a better understanding of factors which effect degree completion rates would serve to enhance the development of future strategies aimed at increasing the postsecondary educational attainment of minorities in the state of Missouri.

RACE/ETHNIC DISTRIBUTION DEGREES CONFERRED
FY 1987
MISSOURI PUBLIC FOUR-YEAR

| | Total # Degrees | Percent |
|---|---|---|
| Black | 694 | 3.5 |
| Other Minority | | |
| Non-Residental Alien | 811 | 4.1 |
| American Indian | 36 | 0.2 |
| Asian | 253 | 1.3 |
| Hispanic | 116 | 0.6 |
| Total Other Minority | 1,216 | 6.1 |
| White | 17,869 | 90.3 |
| TOTAL | 19,779 | 100% |

DISPLAY 38

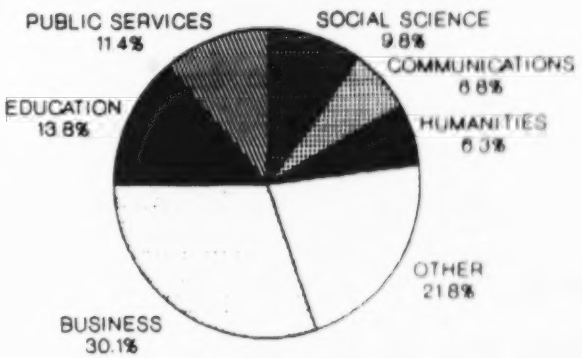
RACE ETHNIC DISTRIBUTION OF ENROLLMENT
FY 1987
MISSOURI PUBLIC FOUR-YEAR

| | Total Enrollment | Percent |
|---|---|---|
| Black | 6,309 | 5.7 |
| Other Minority | | |
| Non-Resident Alien | 3,152 | 2.8 |
| American Indian | 324 | 0.3 |
| Asian | 1,341 | 1.2 |
| Hispanic | 713 | 0.6 |
| Total Other Minority | 5,530 | 5.0 |
| White | 98,844 | 89.3 |
| TOTAL | 100,683 | 100% |

DISPLAY 39

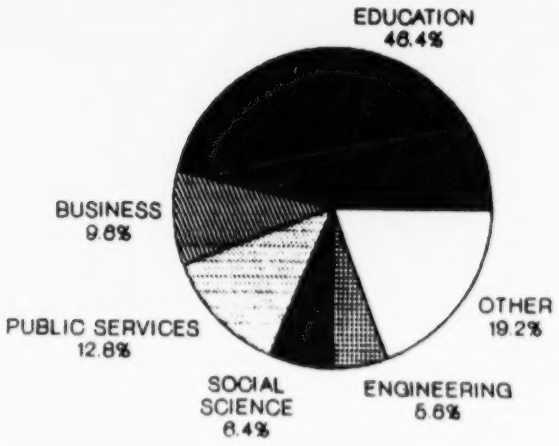
Of the degrees conferred to Blacks in fiscal year 1987, 76.1 percent were at the bachelor's level while 18.0 percent were at the master's level. Displays 40 and 41 present the distribution of degrees across discipline clusters for bachelor's and master's degrees. Similar to the trends reported for all students, a few disciplines accounted for the majority of degrees conferred. The popularity of business, education, and social science was also similar to the trends for all students; however public services rather than engineering was found to be among the four highest demand areas for Black students at the baccalaureate level.

## DISTRIBUTION OF BACHELOR'S DEGREES TO BLACKS FY 1987
### MISSOURI PUBLIC FOUR-YEAR




DISPLAY 40

## DISTRIBUTION OF MASTER'S DEGREES TO BLACKS FY 1987 MISSOURI PUBLIC FOUR-YEAR




DISPLAY 41

### GENDER DIFFERENCES

Gender represents one more dimension worthy of consideration in the context of minority students. The role of women has undergone dramatic change in the past few decades. A commitment to create sex equitable environments by educational leaders, and backed by federal legislation, has resulted in the substantial reduction of cultural barriers which were once a major obstacle to women's educational achievements. As women continue to increase their participation in the labor force, their needs for formal education will also increase. Although recent gains in women's rights have increased women's access to education at all levels, the challenge of changing values, attitudes, and behavior takes time. An analysis of gender within race/ethnic categories will provide important additional information that will be useful in future planning efforts for postsecondary education in the state of Missouri.

In terms of total headcount enrollment at Missouri's public four-year institutions during fiscal year 1987, women constituted a clear majority, 52.0 percent. Dramatic differences among the race/ethnic groups are demonstrated in Display 42. While white females closely approximated the total for the system as a whole (52.5 percent), minority group women had a wider variation of patterns. Blacks had the highest female participation rate (59.0

percent) while other minorities as a group had a rate of only 35.2 percent female owing to the extremely low participation rate of nonresident alien women (28.0 percent). Although Black women have historically been more active than Black men in the pursuit of postsecondary education degrees, it is unclear from these data why Black women in Missouri have a much higher percentage rate than Black men at the public four-year institutions. The difference of 18 percentage points between these two groups emphasizes the importance of further study regarding those factors that affect the educational decisions of Black youth.

PERCENT MALE/FEMALE WITHIN RACE/ETHNIC CLASSIFICATIONS
FOR TOTAL HEADCOUNT ENROLLMENT
FY 1987
MISSOURI PUBLIC FOUR-YEAR

| | Percent Male | Percent Female |
|---|---|---|
| Black | 41.0 | 59.0 |
| Other Minority | | |
| Nonresident Alien | 72.0 | 28.0 |
| American Indian | 48.2 | 51.8 |
| Asian | 57.9 | 42.1 |
| Hispanic | 53.6 | 46.4 |
| Total Other Minority | 64.8 | 35.2 |
| White | 47.5 | 52.5 |
| TOTAL | 52.0 | 48.0 |

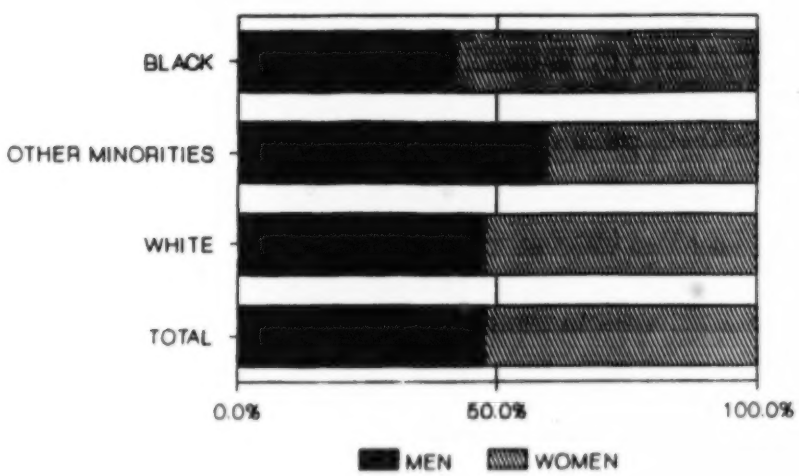
DISPLAY 42

Participation rates for women by race/ethnic classification at the three different student levels (undergraduate, graduate, and first professional) are presented in Displays 43, 44 and 45. Since 83.1 percent of the total headcount enrollment in fiscal year 1987 was at the undergraduate level for all of Missouri's public four-year institutions, it is not surprising that the gender participation rates for undergraduate women were similar to the gender patterns for total headcount enrollment. The only difference was a slight increase in the proportion of other minority women though their participation rate was still significantly lower than the other two groups relative to men of the same race/ethnic classification. The figures for Black women, other minority women, and white women at the undergraduate level were 58.5 percent, 40.3 percent and 52.2 percent respectively. While total female participation at the graduate level was quite similar to the aggregate total for the

public four-year institutions (with a difference of only 1.2 percentage points), it is interesting to note that both Black and white women's participation rates increased 6.9 and 4.4 percentage points respectively, while other minority women significantly reduced their participation by 13.4 percentage points.

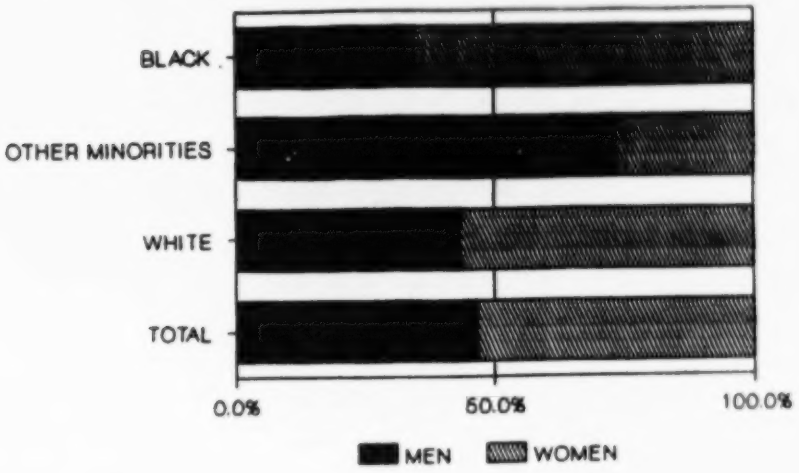
At the first professional level, males emerged with a clear majority on the aggregate level, representing 62.7 percent of all headcount enrollment in fiscal year 1987 at Missouri's public four-year institutions. Despite this reversal of gender participation rates, Black women still maintained a majority of Black enrollment (52.6 percent). Although variability existed among the race/ethnic groups, all categories except Black exhibited female participation rates significantly lower than 50 percent ranging from 20.8 percent for Hispanic women to 42.9 percent for American Indian women.

**UNDERGRADUATE HEADCOUNT ENROLLMENT**
**FULL- AND PART-TIME**
**FY 1987**
**MISSOURI PUBLIC FOUR-YEAR**



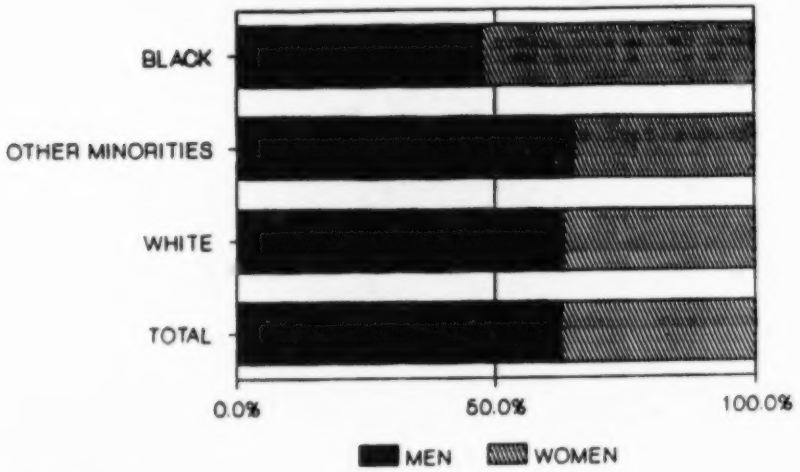

DISPLAY 43

## GRADUATE HEADCOUNT ENROLLMENT
## FULL- AND PART-TIME
## FY 1987
## MISSOURI PUBLIC FOUR-YEAR




DISPLAY 44

## FIRST PROF HEADCOUNT ENROLLMENT
## FULL- AND PART-TIME
## FY 1987
## MISSOURI PUBLIC FOUR-YEAR

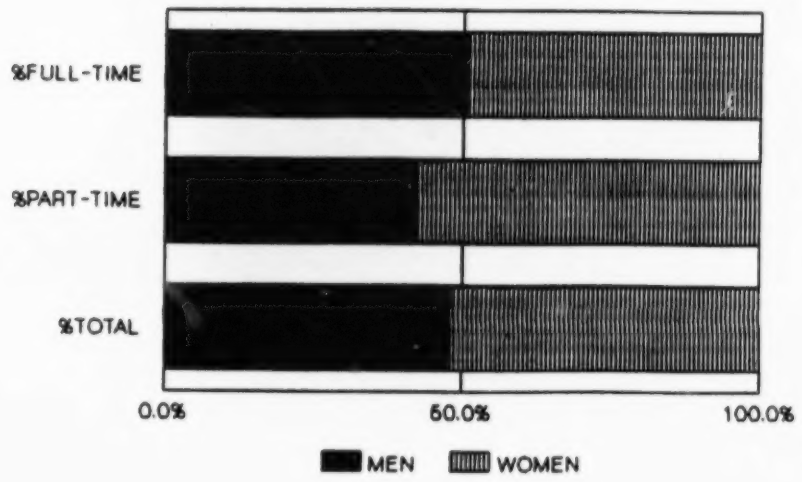



DISPLAY 45

Collectively, these data underscore the high gender participation rates of Black women compared to Black men. Using gender comparisons within race/ethnic classifications, Black women consistently exhibited the highest gender participation rates across all three student levels. While these data draw attention to the relatively lower participation of Black males compared to Black females, it is important to keep in perspective the relatively low participation of both sexes at the aggregate level for Missouri's public four-year institutions.

Although females represented a majority of students enrolled at Missouri's public four-year institutions in fiscal year 1987 (52.0 percent), they were not evenly distributed between full-time and part-time status as is demonstrated in Display 46. At the aggregate level full-time female students were slightly less than a majority (49.4 percent) while part-time headcount enrollment was substantially higher, 57.9 percent. In general women had a higher part-time participation rate than would be predicted from their overall distribution in the student population. This pattern was consistent for all race/ethnic classifications except for nonresident alien women whose distribution between part-time and full-time status matched very closely their overall distribution. While Black females had the highest part-time participation rate compared to men within the same race/ethnic classification (65.0 percent), both Black and white women were approximately six percentage points higher than would be expected from their gender distribution at the aggregate level. While it is not surprising that females had a high part-time participation rate, it adds another dimension to the particularly complex problems that females face in their pursuit of higher education.

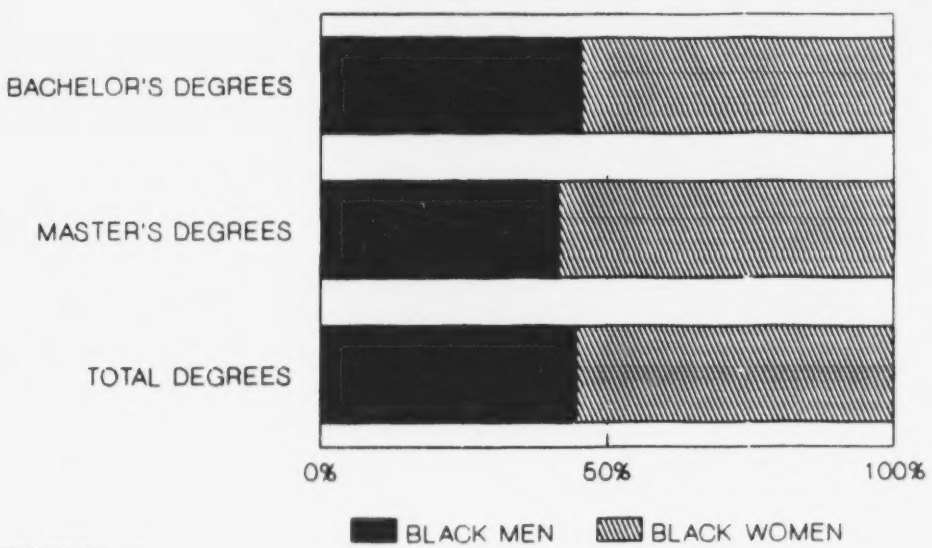
**TOTAL HEADCOUNT ENROLLMENT**
**FULL- AND PART-TIME**
**FY 1987**
**MISSOURI PUBLIC FOUR-YEAR**




**DISPLAY 46**

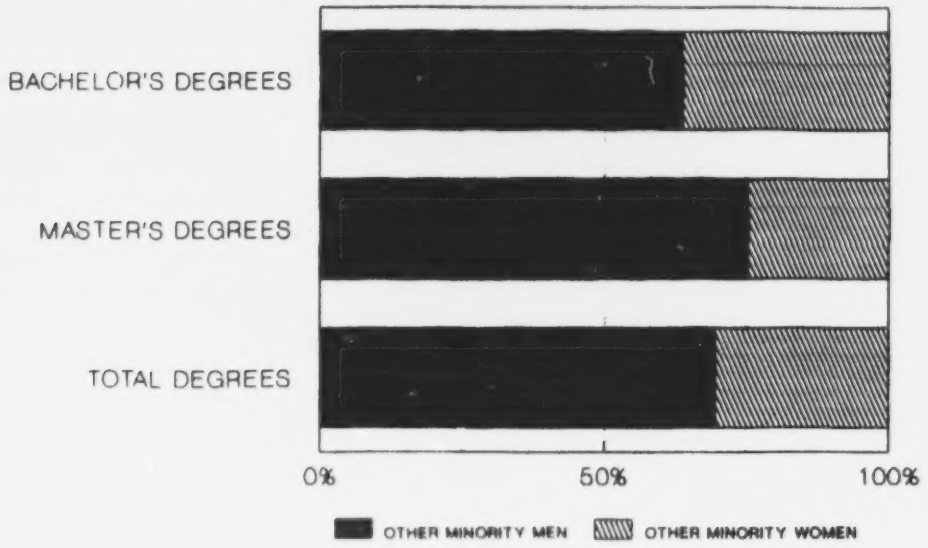
Gender comparisons by race/ethnic classifications for Bachelor's, Master's, and total degrees conferred in fiscal year 1987 at Missouri's public four-year institutions are presented in Displays 47, 48 and 49. When these percents are compared to the gender distribution of headcount enrollment presented in Display 42, similar distributions were exhibited for white women and for total students. In contrast, minority women exhibited lower percents in degrees conferred than would be expected from their gender distribution. Black women represented 59.0 percent of Black enrollment but received only 55.3 percent of degrees conferred while other minority women represented 35.2 percent of other minority enrollment and received 30.4 percent of the degrees conferred. While degrees conferred lag enrollment trends by four or five years, these data suggest the possibility of a lower completion rate of minority women compared to minority men. Although the fact that female students are more likely to attend part-time partially explains their lower rate of degrees conferred, more extensive study of the complex factors effecting degree completion rates is

## GENDER COMPARISONS
## DEGREES CONFERRED TO BLACKS
## FY 1987
## MISSOURI PUBLIC FOUR-YEAR



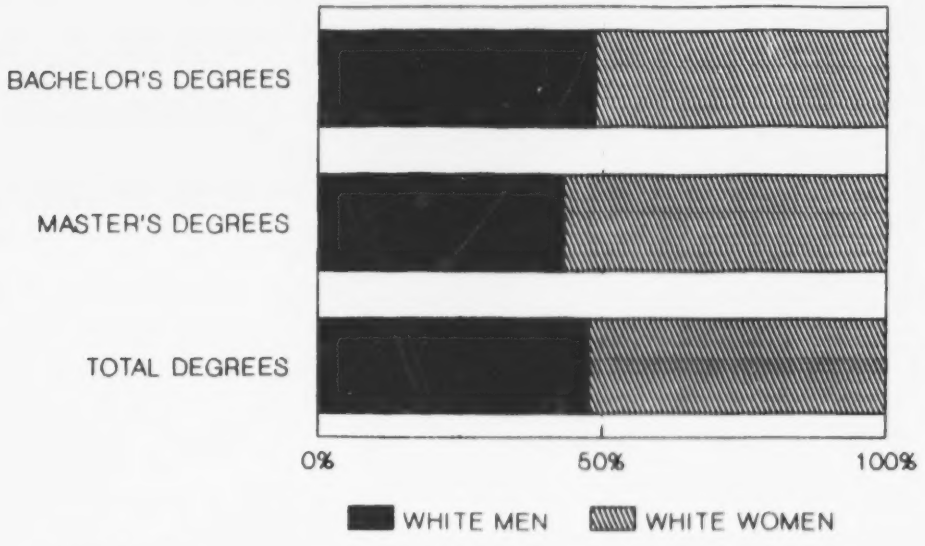

**DISPLAY 47**

# GENDER COMPARISONS
# DEGREES CONFERRED TO OTHER MINORITIES
# FY 1987
# MISSOURI PUBLIC FOUR-YEAR




**DISPLAY 48**

# GENDER COMPARISONS
# DEGREES CONFERRED TO WHITES
# FY 1987
# MISSOURI PUBLIC FOUR-YEAR




**DISPLAY 49**

## SUMMARY OBSERVATIONS

The proportion of Blacks in Missouri's general population is almost twice the proportion of Blacks that participate in postsecondary education at Missouri's public four-year institutions. Furthermore, the percentage of Blacks within the public four-year system is in decline at the undergraduate level. These figures parallel national trends that have been well-documented.

While minority enrollment as a whole has tended to be on a downward trend, counter patterns for Asian and nonresident alien students provide important illustrations of particular minority classifications that have been able to increase their participation at Missouri's public four-year institutions. Whether increases for these two minority groups is accounted for by in-state migration was not clear from these data; however, further study of the relative success of these groups may provide perspective for future planning efforts. In addition, the variability in minority enrollment experienced by different sectors demonstrated that two sectors were successful in increasing Black participation despite the overall decline in Black enrollments. A clearer understanding of the factors associated with increased Black participation will also be helpful in future planning efforts directed at minority involvement in postsecondary education.

The increase of part-time students across minority classifications is a further indication of the importance that this dimension will have in the next decade. Economic conditions faced by many minority students may result in part-time pursuit of postsecondary education as the only viable alternative. While increases in part-time students provide opportunities for institutions, the particular needs of these students should be taken into consideration in future planning efforts.

While Black women are more likely to be enrolled at all student levels than Black men, they are also overrepresented at the part-time level in even greater proportions than would be expected from their overall enrollment while at the same time their degrees conferred rate is lower than would be expected. An understanding of factors affecting these gender differences in enrollment as well as rates of degrees conferred will be helpful in the development of policy directed at intervention strategies to increase the participation of minority students at the postsecondary educational level.

The Coordinating Board's forthcoming study of minority recruitment and retention will include investigations on all of these issues in much greater depth.

## SECTION IV
## PRODUCTIVITY TRENDS
## FY 1984 - FY 1987

The resolution of funding issues affecting Missouri's public higher education institutions requires a long-term commitment as well as a diversified strategy. The necessity of competitive faculty salaries, capital improvements, and increased expenditure for equipment-dependent disciplines by Missouri's public four-year institutions emphasizes the relationship between quality postsecondary educational degree programs in the state and appropriate resource support. Additional dollars do not guarantee a successful outcome, but without adequate funding the quality of education will surely suffer. To ensure the quality of postsecondary education in Missouri, an integrated strategy based upon appropriate state funding, a reasonable tuition policy, more aggressive efforts to receive third party funding, and internal resource reallocations will be necessary.

Constant changes in the number of degrees conferred and enrollment patterns that do not necessarily follow predictions as well as continual shifts in student demand for particular disciplines result in heightened challenges in the management of higher education institutions, especially in the area of resource allocation. Effective management at the institutional level includes the maintenance of clear institutional priorities that guide crucial decisions about the allocation of new resources as well as the reallocation of existing resources. At the discipline level these decisions involve the addition and deletion of some programs as well as changes in the magnitude and scope of the curriculum offerings in others.

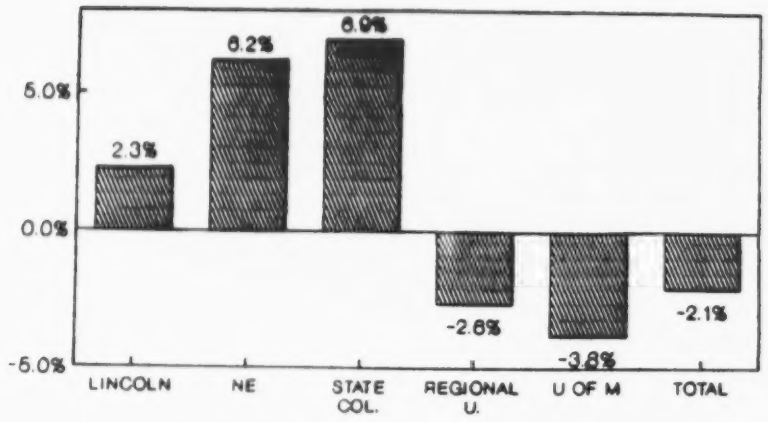
Productivity measures are one set of factors that should be considered prior to making decisions which affect programmatic change. These factors include two input measures (instructional expenditures adjusted for inflation and full-time instructional/research staff) and three output measures (credit hours produced, credit hours per full-time instructional research staff, and inflation adjusted expenditures per credit hour). The following analyses discuss trends for the public four-year institutions on these productivity measures. Owing to some missing data for fiscal year 1983, these analyses were limited to the period fiscal year 1984 - fiscal year 1987.

### INSTRUCTIONAL RESEARCH STAFF

Display 50 demonstrates that at the aggregate level across all disciplines, instructional research staff at public four-year institutions declined 2.1 percent; however, considerable variation was exhibited at the institutional sector level. While regional universities and the University of Missouri declined (-2.6 percent and -3.8 percent respectively), the state colleges, Northeast, and Lincoln all experienced increases (6.9 percent, 6.2 percent and 2.3 percent respectively). An exception to these patterns at the

institutional level involved a 5.0 percent increase at Southwest. Reasons for the differences among sectors are not clear from these data, especially since measurement of instructional research staff was restricted to full-time personnel. Some of the differences between sectors may be accounted for by differential use of, and changes in the percent of, part-time staff and teaching assistants. Notwithstanding these limitations, all sectors demonstrated both increases and decreases in full-time instructional research staff assigned to particular discipline clusters as illustrated in Display 51.

**FULL-TIME INSTRUCTIONAL RESEARCH STAFF**
**PERCENT CHANGE**
**FY 1984 - FY 1987**
**MISSOURI PUBLIC FOUR-YEAR**




DISPLAY 50

PERCENT CHANGE FULL-TIME INSTRUCTION RESEARCH STAFF
BY SECTOR FY 1984 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

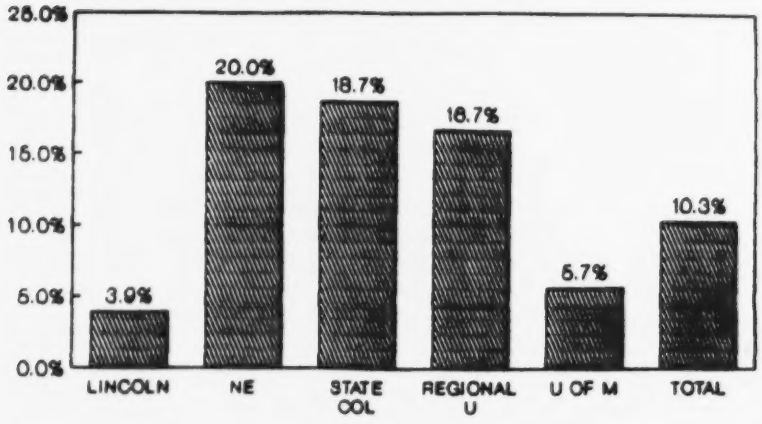
| | Lincoln | Northeast | State Colleges | Regional Universities | University of Missouri |
|---|---|---|---|---|---|
| Agriculture | (80.0)% | 0.0% | 0.0% | (19.6)% | (7.9)% |
| Business | 100.0 | (3.2) | 13.9 | 11.3 | (12.2) |
| Communications | 0.0 | (100.0) | 71.4 | 42.4 | 8.2 |
| Computer Science | 20.0 | 12.5 | 36.4 | 26.1 | 7.1 |
| Education | 10.0 | (55.9) | 4.2 | (22.9) | (4.7) |
| Engineering | N/A | N/A | (100.0) | 0.0 | (7.7) |
| Engineering Rel. | 0.0 | (23.5) | 42.9 | (6.3) | N/A |
| Fine Arts | (22.2) | 11.5 | 5.7 | (7.0) | (10.1) |
| Foreign Language | (50.0) | 57.1 | (50.0) | 3.0 | (1.9) |
| Health | 0.0 | 57.1 | 14.3 | 19.0 | (3.7) |
| Home Economics | (40.0) | (12.5) | N/A | 5.0 | (9.6) |
| Humanities General | 27.3 | 63.6 | 5.4 | 0.6 | (0.8) |
| Life Science | 20.0 | 28.6 | 0.0 | (10.3) | 14.4 |
| Mathematics | 80.0 | 33.3 | 5.9 | 2.5 | 1.0 |
| Physical Science | 0.0 | 11.1 | 6.3 | 10.1 | (7.4) |
| Public Services | (50.0) | (100.0) | 0.0 | (24.1) | (4.7) |
| Social Science | 0.0 | 36.4 | 9.1 | (4.9) | (1.0) |
| Other Professional | N/A | 0.0 | NEW | (7.7) | (4.0) |
| Vocational Technical | N/A | N/A | 0.0 | (100.0) | N/A |
| Avocational/ Miscellaneous | 18.2 | 0.0 | (75.0) | 0.0 | NEW |

DISPLAY 51

## INSTRUCTIONAL EXPENDITURES

At the same time, total instructional expenditures adjusted for inflation as measured by the Higher Education Price Index increased 10.3 percent between fiscal year 1984 and fiscal year 1987 for all of Missouri's public four-year institutions. Despite a range of 16.1 percentage points, Display 52 shows that all sectors experienced an increase on this dimension while Display 53 illustrates that the percent changes assigned to particular discipline clusters involved both increases and decreases.

# INFLATION ADJUSTED INSTRUCTIONAL EXPENDITURE PERCENT CHANGE FY 1984 - FY 1987 MISSOURI PUBLIC FOUR-YEAR




DISPLAY 52

PERCENT CHANGE CREDIT HOURS PRODUCED
BY SECTOR FY 1984 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

| | Lincoln | Northeast | State Colleges | Regional Universities | University of Missouri |
|---|---|---|---|---|---|
| Agriculture | (35.9)% | (29.5)% | (48.7)% | (27.9)% | (32.4)% |
| Business | 5.5 | (17.7) | 3.3 | (15.1) | 0.6 |
| Communications | (36.7) | 12.8 | (5.1) | 84.0 | 11.4 |
| Computer Science | (36.8) | (32.4) | (20.0) | (19.9) | (14.3) |
| Education | 1.2 | (3.8) | 3.2 | (2.1) | 1.1 |
| Engineering | (100.0) | N/A | (38.9) | (35.7) | (22.6) |
| Engineering Rel. | (39.5) | (29.1) | (26.3) | (22.8) | N/A |
| Fine Arts | (60.9) | 2.7 | 11.0 | (8.7) | (12.1) |
| Foreign Language | (2.9) | 69.6 | 24.2 | (8.2) | (2.6) |
| Health | (37.9) | (25.1) | 0.6 | (21.6) | 0.0 |
| Home Economics | (29.6) | (9.5) | N/A | (0.4) | (9.9) |
| Humanities General | (13.4) | 0.7 | (0.5) | 2.3 | (6.9) |
| Life Science | (14.7) | 7.1 | (1.6) | (4.4) | (23.9) |
| Mathematics | (11.8) | 17.9 | 0.0 | 5.9 | (17.4) |
| Physical Science | (14.2) | (22.3) | (6.2) | (4.7) | (19.5) |
| Public Services | (43.0) | (12.4) | 21.9 | 5.2 | 11.6 |
| Social Science | (15.8) | (7.4) | (4.1) | (0.6) | (4.3) |
| Other Professional | 33.3 | (26.3) | 18.5 | 0.8 | (1.7) |
| Vocational Technical | 135.2 | N/A | (6.9) | (3.4) | N/A |
| Avocational/ Miscellaneous | 2.9 | (45.6) | (5.0) | (18.7) | (21.1) |

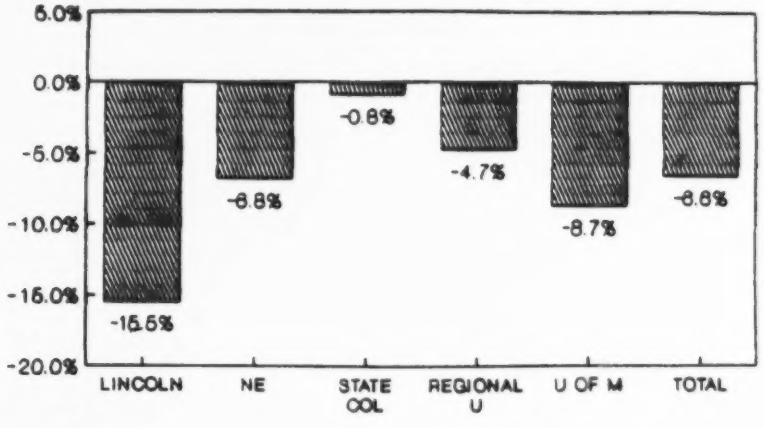
DISPLAY 53

Staff salaries account for the great majority of instructional expenditures (approximately 90 percent). Consequently, changes in the number of full-time staff constituted a major factor affecting instructional expenditures at the institutional level. However, not all of the changes experienced can be attributed to this dimension alone. For example, turnover in personnel could have affected the amount of salary paid to full-time staff even if the number of full-time staff remained the same. In addition, expenditure for equipment, supplies, and travel are other items which affected total institutional instructional expenditures.

## CREDIT HOURS PRODUCED

The percent change in credit hours produced during the period fiscal year 1984 - fiscal year 1987 for each sector and for the total public four-year system is presented in Display 54. The credit hours produced during each fiscal year include summer session, fall semester, and spring semester. The desire to link credit hours produced to specific discipline clusters and to expenditures required the use of data which involved on-campus courses only. Furthermore, the number of off-campus credit hours produced during this time period was minimal compared to the total number of credit hours. It is not surprising that credit hours decreased 6.6 percent across all institutions based on the decline in fall enrollments and the increase in part-time students reported previously in this study. While all sectors experienced some declines in credit hours produced, the state colleges had the smallest decline (-0.8 percent) while Lincoln had the largest decline (-15.5 percent). Exceptions to the general pattern of decline at the institutional level included increases at UMKC, Harris-Stowe, Southern, and Southwest (0.5 percent, 3.0 percent, 6.2 percent and 3.0 percent respectively). Similar to the two input dimensions, the percent change in the production of credit hours increased for some discipline clusters and decreased for others, as illustrated in Display 55.

**CREDIT HOURS PRODUCED**
**PERCENT CHANGE**
**FY 1984 - FY 1987**
**MISSOURI PUBLIC FOUR-YEAR**




DISPLAY 54

PERCENT CHANGE CREDIT HOURS PER FT I/R STAFF
BY SECTOR FY 1984 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

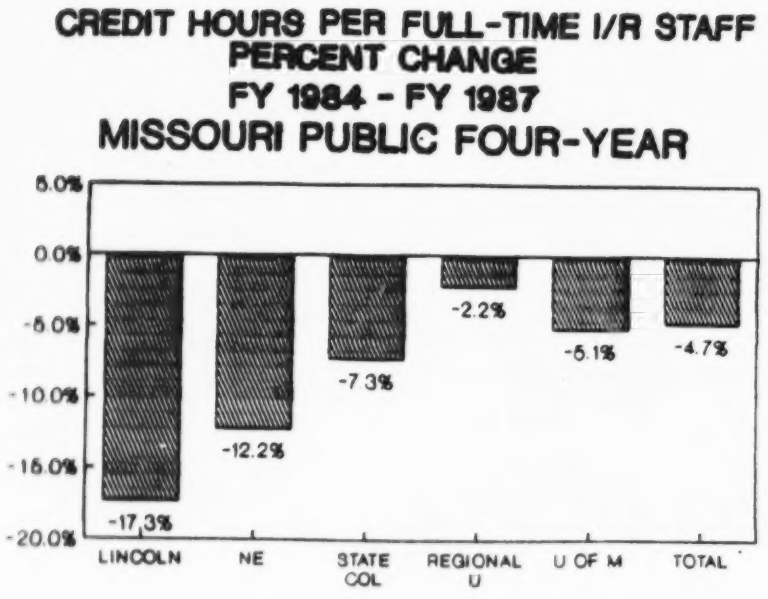
| | Lincoln | Northeast | State Colleges | Regional Universities | University of Missouri |
|---|---|---|---|---|---|
| Agriculture | 220.5% | (29.5)% | (48.7)% | (10.3)% | (26.7)% |
| Business | (47.3) | (14.9) | (9.3) | (23.7) | 14.6 |
| Communications | (36.7) | N/A | (44.6) | 29.2 | 3.0 |
| Computer Science | (47.4) | (39.9) | (41.3) | (36.4) | (20.0) |
| Education | (8.0) | 118.0 | (0.9) | 27.0 | 6.1 |
| Engineering | N/A | N/A | N/A | (35.7) | (16.1) |
| Engineering Rel. | (39.5) | (7.3) | (48.4) | (17.6) | N/A |
| Fine Arts | (49.7) | (7.9) | 5.0 | (1.8) | (2.3) |
| Foreign Language | 94.2 | 7.9 | 148.3 | (10.9) | (0.7) |
| Health | (37.9) | (52.3) | (12.0) | (34.1) | 3.8 |
| Home Economics | 17.3 | 3.5 | N/A | (5.1) | (0.3) |
| Humanities General | (31.9) | (38.4) | (5.6) | 1.8 | (6.2) |
| Life Science | (28.9) | (16.7) | (1.6) | 6.7 | (33.5) |
| Mathematics | (51.0) | (11.6) | (5.6) | 3.4 | (18.3) |
| Physical Science | (14.2) | (30.1) | (11.7) | (13.4) | (13.1) |
| Public Services | 14.0 | N/A | 21.9 | 38.7 | 17.1 |
| Social Science | (15.8) | (32.1) | (12.1) | 4.5 | (3.3) |
| Other Professional | N/A | (26.3) | N/A | 9.2 | 2.4 |
| Vocational Technical | N/A | N/A | (6.9) | N/A | N/A |
| Avocational/ Miscellaneous | (12.9) | (45.6) | 280.1 | (18.7) | N/A |

DISPLAY 55

## CREDIT HOURS PRODUCED PER INSTRUCTIONAL STAFF

Although full-time instructional staff at Missouri's public four-year institutions had increased in three of the five sectors between fiscal year 1984 and fiscal year 1987, credit hours produced per full-time instructional staff for the same time period declined in every sector, as illustrated in Display 56. The decrease of 4.7 percent for the total public four-year system was unevenly spread across the sectors. Regional universities had the smallest loss (-2.2 percent) while Lincoln had the largest loss (-17.3 percent).

In addition to decreases in the absolute number of credit hours produced, possible changes in faculty load, class size, and part-time/full-time staff distribution are some of the factors that may account for these declines. The only exception at the institutional level was for Northwest which had a 1.1 percent increase in credit hours produced per instructional staff. Display 57 presents the percent change in credit hours per full-time instructional staff for each of the discipline clusters during this same time period. While the majority of disciplines experienced declines, each sector involved some disciplines which experienced increases.




DISPLAY 56

PERCENT CHANGE INSTRUCTIONAL EXPENDITURES INFLATION ADJUSTED
BY SECTOR FY 1984 - FY 1987
MISSOURI PUBLIC FOUR-YEAR

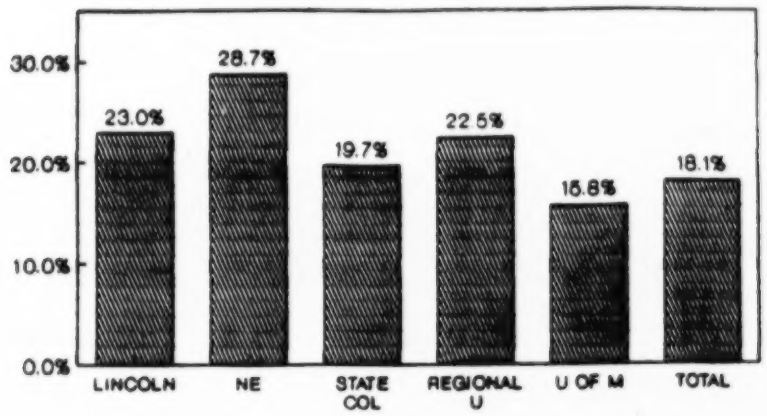
| | Lincoln | Northeast | State Colleges | Regional Universities | University of Missouri |
|---|---|---|---|---|---|
| Agriculture | (17.1)% | (9.4)% | 1.5% | 28.6% | 5.3% |
| Business | (17.6) | 24.5 | 27.8 | 25.5 | 6.9 |
| Communications | 26.1 | 0.7 | 1.3 | 49.1 | 5.4 |
| Computer Science | 40.9 | 20.1 | 17.2 | 120.4 | 139.8 |
| Education | (5.0) | 8.7 | 13.8 | 9.3 | 3.3 |
| Engineering | (100.0) | N/A | (65.3) | (66.6) | 8.7 |
| Engineering Rel. | 10.0 | (12.8) | 45.5 | 25.3 | N/A |
| Fine Arts | 8.3 | 19.5 | 28.5 | 8.3 | 2.4 |
| Foreign Language | (29.2) | 65.1 | 14.2 | (3.5) | 1.7 |
| Health | (21.7) | (3.8) | 34.2 | 7.1 | 3.9 |
| Home Economics | (1.7) | 3.5 | N/A | 37.1 | (6.4) |
| Humanities General | 15.7 | 32.0 | 6.5 | 14.0 | 9.8 |
| Life Science | 0.2 | 64.6 | 7.1 | 14.2 | 6.2 |
| Mathematics | 53.6 | 57.1 | 16.4 | 19.0 | 1.2 |
| Physical Science | 8.7 | 18.9 | 36.0 | 9.6 | 1.3 |
| Public Services | (8.0) | (10.2) | (11.1) | 0.8 | (3.2) |
| Social Science | 8.6 | 32.7 | 22.5 | 12.8 | (0.6) |
| Other Professional | N/A | 68.8 | 41.6 | (2.9) | 9.1 |
| Vocational Tech. | (100.0) | N/A | (37.9) | 55.0 | N/A |
| Avocational/ Miscellaneous | 56.5 | (9.3) | 31.9 | 85.1 | 3.1 |

DISPLAY 57

## EXPENDITURES PER CREDIT HOURS PRODUCED

Display 58 demonstrates that the combined effect of decreases in credit hours produced and increases in inflation adjusted instructional expenditures for fiscal year 1984 - fiscal year 1987 at Missouri's public four-year institutions resulted in sizeable increases in the percent change of inflation adjusted expenditures per credit hour for all sectors. The average increase of 18.1 percent across all sectors represented a sharp reversal from the decreases experienced at the end of the previous decade and the beginning of the 1980s. The percent changes on this dimension associated with the discipline clusters for each sector are presented in Display 59. Although most disciplines experienced increases, a variable pattern is exhibited for the discipline clusters both within and across sectors.

# INFLATION ADJUSTED EXPENDITURES PER CREDIT HOUR PERCENT CHANGE FY 1984 - FY 1987 MISSOURI PUBLIC FOUR-YEAR




DISPLAY 58

PERCENT CHANGE INFLATION ADJUSTED EXPENDITURES PER CREDIT HOUR
MISSOURI PUBLIC FOUR-YEAR
BY SECTOR FY 1984 - FY 1987

| | Lincoln | Northeast | State Colleges | Regional Universities | University of Missouri |
|---|---|---|---|---|---|
| Agriculture | 29.3% | 28.4% | 97.6% | 78.2% | 55.8% |
| Business | (21.9) | 51.2 | 23.6 | 47.9 | 6.3 |
| Communications | 99.3 | (10.7) | 6.7 | (18.9) | (5.4) |
| Computer Science | 123.0 | 77.7 | 46.4 | 175.0 | 179.7 |
| Education | (6.1) | 13.0 | 10.3 | 11.6 | 2.2 |
| Engineering | N/A | N/A | (43.2) | (48.1) | 40.4 |
| Engineering Rel. | 81.9 | 23.1 | 97.5 | 62.2 | N/A |
| Fine Arts | 176.9 | 16.3 | 15.7 | 18.7 | 16.6 |
| Foreign Language | (27.1) | (2.7) | (8.0) | 5.1 | 4.3 |
| Health | 26.0 | 28.3 | 33.5 | 36.5 | 3.9 |
| Home Economics | 39.8 | 14.4 | N/A | 37.6 | 3.9 |
| Humanities General | 33.6 | 31.0 | 7.1 | 11.4 | 18.0 |
| Life Science | 17.4 | 53.7 | 8.8 | 19.5 | 39.6 |
| Mathematics | 74.1 | 33.2 | 16.4 | 12.4 | 22.6 |
| Physical Science | 26.7 | 53.0 | 44.9 | 15.0 | 25.8 |
| Public Services | 61.4 | 2.6 | (27.1) | (4.2) | (13.3) |
| Social Science | 28.9 | 43.4 | 27.7 | 13.5 | 3.9 |
| Other Professional | N/A | 129.0 | 19.5 | (3.7) | 10.9 |
| Vocational Tech. | (100.0) | N/A | (33.3) | 60.5 | N/A |
| Avocational/ Miscellaneous | 52.1 | 66.6 | 38.8 | 127.8 | 30.6 |



DISPLAY 59

## SUMMARY OBSERVATIONS

Despite certain limitations in the productivity data, the cumulative effect of the trends reported highlights two major points. First, regarding funding, the recent years can be viewed as a period of relative recovery in comparison to the serious resource erosion that occurred in the previous decade. Secondly, the dynamic quality of the higher education enterprise at Missouri's public four-year institutions as well as the diversity of these institutions have been highlighted by these data. At the institutional level difficult decisions have been made in the allocation and reallocation of resources assigned to specific programs. Expectations of limited state resources in the next few years emphasize the continuing need for careful management at the institutional level of programmatic funds.